

TRAWL SURVEY OF SHRIMP AND FORAGE FISH ABUNDANCE
IN ALASKA'S WESTWARD REGION, 2003



By

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ABSTRACT

The Alaska Department of Fish and Game (ADF&G) conducted a small-mesh bottom trawl survey for shrimp and forage fish from September 29 to October 28, 2003 in waters of the Westward Region's Kodiak commercial shrimp fishing district. The purpose of the survey was to assess relative pandalid shrimp biomass within the district. Results were compared with established threshold biomass levels below which no fisheries can occur. Secondary objectives included obtaining species composition data and length frequencies from commercially important groundfish and shrimp, generating relative density estimates for forage fish, and tagging Pacific cod *Gadus macrocephalus* as part of an ongoing mark-recapture study.

A standard, high-opening, shrimp research trawl net with 3.1-cm stretch mesh throughout the mouth, body, and codend was used to complete 138 tows. Stations were selected in established strata using a random number generator with tows conducted for a standard distance of 1.85 km. The entire catch of each tow was weighed and sorted by species with a subsample examined to determine proportions of small animals. Commercially important groundfish, shrimp, and forage fish were sampled for species identification and size characteristics. Population estimates for shrimp were generated using an area swept technique.

No sections in the Kodiak District produced shrimp population estimates above the department's established minimum acceptable biomass index (MABI), the criteria used as a threshold for opening commercial shrimp fishing. Most sections remain well below historic population levels, but have remained relatively stable in recent surveys.

Catch composition in the 2003 survey was approximately 13% shrimp and 87% fish. The primary shrimp species captured was the northern pink shrimp *Pandalus borealis*. Walleye pollock *Theragra chalcogramma*, flathead sole *Hippoglossus elassodon*, and arrowtooth flounder *Atheresthes stomias* comprised the majority of fish catches. Forage fish were found throughout the survey area with eulachon *Thaleichthys pacificus* and Pacific sandfish *Trichodon trichodon* occurring in greatest volume.

INTRODUCTION

The Alaska Department of Fish and Game (ADF&G) conducted a small-mesh bottom trawl survey for shrimp and forage fish from September 29 to October 28, 2003. The survey focused on historically productive shrimp grounds in nearshore waters around Kodiak Island, Shelikof Strait, and bays along the south side of the Alaska Peninsula located in the Kodiak shrimp management district of Westward Registration Area J (Figure 1). Districts are listed in Title 5 of the Alaska Administrative Code Chapter 31 and have been further divided into sections for fishery management purposes (Figure 2). The survey was a platform of opportunity for assessing forage fish distribution and abundance.

Shrimp have been commercially harvested around Kodiak Island since 1958 and along the south side of the Alaska Peninsula since 1968. Total landings averaged more than 50 million pounds per year during the 1960s and 1970s, which was primarily taken with trawl gear (Figure 3). Minor harvests have occurred sporadically since 1986. The pink or northern pink shrimp *Pandalus borealis* comprised more than 85% of the catch in the heyday of the fishery, but humpy shrimp *P. goniurus*, coonstriped shrimp *P. hypsinotus*, and sidestriped shrimp *Pandalopsis dispar* all made significant contributions to the harvest (Gaffney 1981). Other shrimps taken incidentally include several species from the families Crangonidae and Hippolytidae. Spot shrimp *P. platyceros* and coonstriped shrimp have occasionally been the target of minor pot fisheries. Little activity for trawl shrimp has occurred since 1982 as stock abundance and fisheries declined sharply with changing oceanographic conditions (Anderson 2000). Production has averaged less than 10,000 pounds per year since 1986 (Jackson and Ruccio 2003)

ADF&G began research on pandalid shrimp in 1968 with a commercial fishery logbook program. The objectives of this program were to establish baseline data on relative stock abundance and to define basic life history parameters for the primary species involved in the commercial fisheries (Jackson et al. 1983). The trawl survey stock assessment program began in 1970 to provide directly comparable stock abundance indices and monitor recruitment, growth, and the effects of fishing on the population age structure. Successive indices for a given stock were shown to track fluctuations in relative abundance over time (Jackson 1979). A management strategy developed in 1979 directly utilized survey results as the primary data source for harvest level determination. Harvest levels were based on proportions of abundance index thresholds. The management goal was to achieve maximum harvests without affecting reproductive potential. The strategy was based on trends in stock abundance relative to a representative biomass index (RBI). This level is defined as the mean abundance estimate obtained after initial exploitation but prior to the abundance decline. It was thought that recovery to this level could reasonably be expected. Based on the RBI, a second level called the minimum acceptable biomass index (MABI) was established at 40% of the RBI level. Stocks for which abundance levels were less than the prescribed MABI were considered severely depressed and no fishing was allowed (ADF&G 1982). The management plan approved by the Alaska Board of Fisheries (BOF) in 1982 detailed RBI and MABI levels for 26 shrimp fishing sections (Table 1).

ADF&G conducted spring and fall stock assessment surveys for shrimp during the years when shrimp abundance was high and commercial fishing effort was at its greatest level. As stocks declined and commercial fishing effort decreased, the level of research conducted by ADF&G also decreased. Trawl assessment surveys of shrimp stocks were first reduced from spring and fall surveys to a single fall survey in 1986. Further funding reductions resulted in a biennial shrimp survey beginning in 1987 and a triennial survey from 1989 to 2001. The scope of areas covered by the shrimp surveys has also declined since the early 1980s as a function of budget constraints. Funding from National Marine Fisheries Service (NMFS) to extend their Pavlof Bay small-mesh trawl data series and monitor long-term changes of the species community structure in the Gulf of Alaska (GOA) was the basis for an additional survey in 2002. The survey series continued in 2003 when ADF&G supported the program with funds from commercial fishing license sales and a nearshore marine research project grant.

Forage fish populations have come under increased scrutiny by federal and state regulatory bodies. In 1998, the North Pacific Fishery Management Council and in 1999 the BOF, adopted prohibitions on the directed take of forage fish in the North Pacific and Bering Sea. Both groups recognized the importance of forage fish in the transfer of energy from primary to secondary producers in the marine ecosystem as well as being important food for marine mammals and many commercial groundfish species. ADF&G has not conducted forage fish research per se, but catch data from prior shrimp or small-mesh trawl surveys has provided important information on forage fish populations to other agencies and researchers. Changing species composition documented from the long term, regular assessment program has given insight on the effects of changing oceanographic conditions (Anderson et al. 1997a and 1997b, Anderson and Piatt 1999).

OBJECTIVES

The primary objective of the 2003 small-mesh trawl survey was to assess the relative stock abundance of shrimp in the historically productive sections of the Kodiak District. Population estimates were compared with established MABIs to determine the potential for commercial fishery openings.

Secondary objectives of the 2003 survey were to:

- Determine species composition of the catch by haul and survey area.
- Obtain length frequency distributions for commercially important shrimp and fish species.
- Obtain composition samples of shrimp for each stratum surveyed and analyze each sample for sex and length frequency.
- Compare relative abundance of shrimp to recent and historic survey data to make inferences about population trends.
- Generate density estimates for forage fish species from the areas trawled.

- Floy-tag¹ Pacific cod *Gadus macrocephalus* captured during the survey as part of an ongoing mark-recapture project to study migration and growth patterns of that species.

METHODS

Trawl Description and Survey Procedures

The 27.4 m ADF&G research vessel *Resolution* was used to trawl areas of known historic shrimp habitat and areas of historic commercial exploitation. An 18.6 m small-mesh trawl with a three bridle, high-opening was used. The gear was initially developed by NMFS and adopted as the standard for shrimp trawl research by NMFS, ADF&G, and Canadian researchers in British Columbia. This net has an 18.6 m footrope with a 17.0 m tickler chain suspended by 29 cm dropper chains. Astoria semi-vee trawl doors weighing 340 kg each and measuring 1.7 m x 2.7 m were attached with three 18.2 m dandyines (1.8 cm in diameter) to hold the net open. Flotation was achieved by using twenty-nine 16.6 cm floats. The net was constructed with 3.1 cm stretch mesh through the mouth, body, and codend. Electronic net measurement systems and scuba observations have shown this net opens to an average width of 9.8 m and to a height of 4 m (Watson 1987).

Bays to be surveyed were divided into strata based on known historic shrimp population areas. In some smaller bays, this division was not utilized. Within the stratum or bay, each survey area was divided into blocks of four stations with a station encompassing approximately 3.4 km². One station within each block was selected using a random number generator. If the station was determined to be untrawlable, the closest adjacent station within the four-station block with trawlable bottom was selected. The trawl net was towed at a speed of 3.7 km/h and for a distance of 1.85 km. Several stations were not trawled for the full 1.85 km due to untrawlable bottom types. Total distance towed was recorded by Differential Global Position System (DGPS) readings.

Total catch from each trawl haul was weighed to the nearest two-kilogram increment by lifting the codend with a crane scale. The entire haul was sampled for commercially important species including: sablefish *Anoplopoma fimbria*, Pacific cod, walleye pollock, Pacific halibut *Hippoglossus stenolepis*, all rockfish species *Sebastes* and *Sebastolobus*, lingcod *Ophiodon elongatus*, Giant Pacific octopus *Octopus dofleini*, all salmon species *Oncorhynchus* sp., all sharks in the families Lamnidae and Squalidae, all skates in the family Rajidae, Dungeness crabs *Cancer magister*, king crabs *Paralithodes* sp. and *Lithodes* sp., Tanner crabs *Chionoecetes* sp., and Pacific herring *Clupea pallasii*. In many instances, adult and juvenile animals were sampled differently (e.g., adult walleye pollock were whole-haul sampled, while juvenile pollock were subsampled). In addition, giant wrymouth *Cryptacanthodes giganteus* and large pieces of debris were whole-haul sampled because these items were not likely to be taken in a subsample split.

A 1.5 m² splitting net with a 3.1 cm mesh liner was used to obtain a subsample of the total catch. The splitting net was tied into the sorting bin before the haul was dumped from the codend. The

¹ Use of trade names does not constitute an endorsement by ADF&G.

splitting net was then lifted up through the catch by hydraulic crane and the subsample moved to a sorting table for further assessment (i.e., table subsample). The entire table subsample and animals that were whole-haul sampled were then identified to species, enumerated, and weighed to the nearest kilogram. A second subsample of shrimp (i.e., shrimp-only subsample) was taken from the initially selected table subsample to determine shrimp species composition. This shrimp-only subsample was weighed to the nearest gram.

All commercially important groundfish species were measured to obtain size frequency distributions. Fish species were measured from snout tip to fork or mid point of the caudal fin. From each trawl station where sufficient shrimp were available, 200 shrimp (typically pink shrimp) were measured from the right eye socket to the midpoint on the posterior margin of the carapace to the nearest 0.5-mm.

A composite sample of shrimp was collected from all hauls within each stratum. This sample was preserved in ethyl alcohol to be sexed in the laboratory after the completion of the at-sea portion of the survey. The primary pandalid shrimp in the strata composition samples were identified to species, measured, weighed, and sexed using techniques described in Butler (1980).

Shrimp Population Estimation

Shrimp population estimates for each stratum from the 2003 trawl survey were derived using an area-swept technique (Alverson and Pereyra 1969). Estimates from each stratum were totaled to provide an abundance index for each section. Based on net performance data, it is assumed that the trawl swept a path 9.8 m wide and the total area swept by the trawl in a one km tow was $1/102 \text{ km}^2$. All tows were recorded in nautical miles and converted to kilometers (nautical miles $\times 1.852 =$ kilometers towed). In instances where tow distance was either less than or greater than 1.85 km, catch data was proportioned accordingly. The catch of shrimp per one kilometer tow was converted into a kg per km^2 density estimate by multiplying by a factor of 102, or the number of net widths in a kilometer. The density was then multiplied by the total area (km^2) within a stratum that was considered shrimp habitat to generate the population index:

$$\text{Population index} = \text{shrimp kg/km towed} \times 102 (\text{area swept}) \times \text{station or stratum size (km}^2\text{)}$$

Some assumptions are undertaken in using the area swept technique. First, it is assumed that all the shrimp within the trawl path are caught. Secondly, it is assumed that the total area considered contains all the shrimp within that selected station or strata. As these assumptions may not always be the case, the generated population estimate is a relative and not an absolute index. In addition, estimates are for all species of shrimp captured in survey trawls and not just those fished commercially. Spot shrimp or 'prawns' and coonstriped shrimp, are commonly found in steep, rocky substrate and are not well sampled by trawl gear. Therefore, their population densities are not well estimated using this technique.

RESULTS

One hundred thirty-seven stations were successfully sampled in waters around the Kodiak archipelago and south of the Alaska Peninsula during the 2003 survey (Figure 4). Survey haul parameters such as tow start and end position, date, depth, bottom temperature, and catch were collected for each haul (Appendix A). One station was repeated when a crab pot caused irregular net performance rendering it unacceptable for estimating populations.

Groundfish and various invertebrates accounted for the majority of the total catch by weight. Walleye pollock were 34% of the total weight, followed by flathead sole *Hippoglossoides elassodon* (14%), shrimp (13.2%), arrowtooth flounder *Atheresthes stomias* (12.8%), and jellyfish of the genus *Cyanea* (6.3%) (Table 2). Within the shrimp species, 11.6% of the total weight were northern pink shrimp, 1.1% sidestriped shrimp, and 0.5% humpy shrimp. Coonstriped and other non-commercial shrimp species comprised 0.2% of the survey catch. More than 23,000 length measurements were taken from 34 groundfish species and Pacific halibut. Mean sizes ranged from 10.5 cm for capelin to 135 cm for Pacific sleeper sharks (Table 3). Detailed length frequencies are provided for the most commonly measured fish in Appendix B.

Jellyfish were encountered in 96% of the survey hauls averaging 15 kg per km towed. These gelatinous zooplankton can occur in dense aggregations and consume high numbers of commercially important fish and crustacean larvae (Purcell and Sturdevant, 2001). Jellyfish were speciated in 2003 for the first time in the small-mesh trawl survey series with *Cyanea* sp. as the largest component. *Chrysaoras melanaster*, *Aurelia* sp. and comb jellies (Phylum Ctenophora) were all found in survey hauls (Figure 5).

Forage fish were captured throughout the survey area totaling 5.4% of the survey catch by weight. Eulachon were the most abundant occurring in 70% of the trawl hauls and comprising 3.6% of the catch by weight. Pacific sandfish was next at 1.6% of the sample weight. Other forage fish species caught included longsnout pricklyback *Lumpenella longirostris*, capelin *Mallotus villosus* and rainbow smelt *Osmerus mordax*.

Shrimp Populations

Northern pink shrimp were captured in 88% of the survey hauls, averaging 25.7 kg per km towed. The highest density was found in Wide Bay on the Alaska Peninsula in the Kodiak District where hauls averaged 129.8 kg per km towed (Figure 6). Northern pink shrimp density was second highest in the Marmot Island Section where 11 hauls averaged 54.1 kg per km towed. Lowest densities occurred in the Ugak Bay and Twoheaded Island Sections; two areas that had supported substantial commercial fisheries decades earlier. Relative total shrimp abundance estimates followed a similar pattern, but varied somewhat because of habitat considerations. Results from stations on fishing grounds that had been traditionally utilized in the Marmot Island Section of the Kodiak District produced the largest estimated shrimp population

at 1,406 metric tons (mt). Inner Marmot, Uyak and Uganik Bays all yielded estimates in excess of 400 mt (Table 4).

A shrimp population estimate of 8,527 mt was generated for central Shelikof Strait. Thirty exploratory tows over a widespread area produced this comparatively large estimate. The average density of 28.5 kg of shrimp per km towed was only slightly higher than the entire survey average.

Carapace lengths were recorded from 21,131 northern pink shrimp according to survey protocol. The average size for all northern pink shrimp measured onboard was 17.2 mm carapace length (CL) (Figure 7). Average size was largest in Uyak Bay followed by Alitak Flats, Puale Bay and Alitak Bay. Twoheaded Island, Shelikof Strait and Marmot Island all had an average size less than 16.9 mm CL (Figure 8).

Composite samples of northern pink shrimp collected by strata and section were examined in the laboratory for size and sex characteristics of the populations. (Figures 9-12). Few ovigerous female or transitional stage shrimp were observed due to the timing of the survey. Most shrimp transitioning from male to female appear to have completed this change by the time of the survey. The ovigerous period was just beginning as egg-bearing females appeared frequently in Alitak Bay sample hauls conducted late in the survey. Marmot Bay, Marmot Island and Chiniak Bay all exhibited multiple modes of female shrimp indicating several age classes moving through the population. Potential recruitment to the spawning biomass appeared most positive in the Marmot Island section, which displayed a strong mode of 15 mm CL male shrimp. Additional areas with positive signs of coming recruitment included Kukak and Puale Bays where a number of shrimp less than 10 mm CL appeared in the samples. Shrimp that small are only marginally recruited to the sampling gear so those encounters could indicate an increasing population in following years. Shelikof Strait and bays open to the strait including Kukak, Wide and Puale did not have female shrimp less than 17 mm CL, which were routinely evident elsewhere.

Humpy shrimp were only found in Wide Bay with the exception of a minor occurrence in Puale Bay (Figure 13). The population in Wide Bay declined from an estimated 186 mt in 2002 to 57 mt in 2003. Mean carapace length of sampled shrimp during the most recent survey was 15.9 mm (Figure 14).

Sidestriped shrimp were more widespread, occurring in 75% of the trawl hauls (Figure 15). Kukak and Deadman Bays had the greatest concentration, however nearly all samples coming from deeper than 80 fathoms had sidestriped shrimp present. The mean length measured aboard the survey cruise was 24.1 mm. It appeared that at least 5 age classes were present in the population with two distinct modes of males (Figure 16). A biomass estimate of 1,754 mt was generated for sidestriped shrimp from all areas surveyed, however 1,572 mt of that came from the Shelikof Strait (Table 5). This was due to the relatively large area considered in the Shelikof estimate and the above average sidestriped shrimp density.

Forage Fish Distribution

Eulachon were the most abundant forage fish, present in 70% of the survey hauls. The highest catch was in South Sitkalidak Strait with densities above average in Kiliuda and Marmot Bays and the Shelikof Strait (Figure 17). Eulachon averaged 7.5 kg per km towed from all survey hauls. Pacific sandfish were the second most abundant of the forage fishes but found in only 26% of the hauls. The largest catches occurred in Wide Bay and Alitak Flats, two of the shallower areas sampled. Longsnout pricklebacks, as the next most abundant forage fish, occurred in 25% of the survey hauls. The heaviest concentration was found at the south end of Kodiak Island with over 75% of all pricklebacks encountered coming from the Alitak Bay and Alitak Flats commercial shrimp fishing sections. Pacific herring, *Clupea pallasii* are not considered a forage fish under state regulation, 5 AAC 39.212 Forage Fish Management Plan, however they are an important food source for many species of birds, animals and fish. Herring accounted for 0.23% of the total survey catch weight and occurred in 42% of the hauls.

Tagged Pacific Cod

Pacific cod predation contributes significantly to shrimp mortality (Albers and Anderson 1985). ADF&G has been studying cod movements and growth for the past five years. During the 2003 small-mesh survey, 366 Pacific cod were tagged and released with an orange spaghetti-type Floy-tag at the base of the first dorsal fin. Commercial fishermen recovered two of the fish released during the 2003 small-mesh trawl survey as of February 25, 2004.

Bottom Temperatures

Water temperature was recorded on each tow during the survey using a thermograph attached to the headrope of the trawl. The coolest ocean floor temperatures were found in Shelikof Strait and Deadman Bay with the warmest waters found in bays along the Alaska Peninsula and at the south end of Kodiak Island (Figure 18). The average survey bottom temperature was 7.6°C with a range from 4.9°C to 9.9°C.

DISCUSSION

Shrimp populations as a whole were down somewhat in 2003 from the previous two years. Shrimp comprised 13.2% of the total survey catch as compared to 15.5% in 2002 and 26% in 2001. The average density of northern pink shrimp dropped to 25.3 kg per km towed in 2003 from 29.9 kg per km towed in 2002 and 61.1 kg per km towed in 2001 (Figure 19). This reduction was not consistent in all areas. Estimates for Inner Marmot Bay, Marmot Island and Uyak Bay showed little change from previous surveys. Also, the reduction was not observed in sidestriped shrimp populations. Sample hauls averaged 2.4 kg per km towed in 2003 as compared to 1.0 kg per km towed in 2002.

The largest change in shrimp populations occurred in Wide Bay where the current 334 mt estimate of all shrimps is less than half the previous year's estimate which was also reduced from the year before that. Catches of northern pink, humpy, coonstriped and sidestriped shrimps all declined over the last 3 years with the latter two virtually disappearing from the Wide Bay survey (Figure 20). The size composition of northern pink shrimp also changed with the proportion of large shrimp reduced by about one-half from 2001 (Figure 21). Wide Bay shrimp populations may have experienced unusually high natural mortality or perhaps a migration of the larger individuals to the Shelikof Strait.

The primary objective of the survey was to compare shrimp population estimates with established MABIs and determine the potential for commercial fishery openings. All historically fished stocks surveyed were below their MABI and considered severely depressed (Table 6). They will not open to commercial shrimp fishing until a survey shows a recovery to the minimum acceptable levels. Wide Bay, part of the Mainland Section, had produced an estimate above the MABI required for a fishery during the two previous surveys but fell below MABI with the current estimate. Sample hauls from Shelikof Strait generated the largest estimate of shrimp abundance for any area surveyed. As part of the Kodiak District General Section, Shelikof Strait is currently open to commercial shrimp fishing from June 15 to February 28 without a MABI specified. Commercial fishing activity has been minimal and the harvest miniscule compared to the 8,500 mt population estimate.

A well documented ecological shift from dominant shellfish to dominant groundfish populations occurred with a warming of Gulf of Alaska waters beginning in the late 1970s. Temperatures in recent years have been cooler but an overall trend has not been clearly established. Temperatures of 3°C to 6°C were found ideal for larval shrimp development in the laboratory (Nunes 1984). Large pink shrimp populations are most commonly found between 0°C and 5°C (Shumway, et al. 1985). Ocean bottom temperatures recorded on the 2003 survey were largely warmer than optimum for pandalid shrimp with only 24% of the hauls from 2003 exhibiting ocean bottom temperatures of 6°C or lower. Unless cooler waters prevail in the Gulf of Alaska it is not likely shrimp populations will rebound to former levels in the short term.

An exception to the prevailing evidence of greater shrimp productivity with cooler water occurs in Wide Bay on the south side of the Alaska Peninsula. Despite a considerable reduction from the previous two years, this bay still had the highest density of northern pink shrimp found during the 2003 survey. This relatively shallow bay is nearly enclosed by a series of barrier reefs between the bay and Shelikof Strait. During the last three surveys, this bay had some of the highest bottom water temperatures and yet also had the highest shrimp densities. In contrast, two similar shallow bays, Kujulik Bay located 50 miles to the southwest, and Puale Bay 50 miles to the northeast also showed relatively high water temperatures but exhibited considerably lower shrimp densities. Neither of these bays has the protective reef system occurring across the mouth of the bay and perhaps that accounts for higher shrimp densities associated with the warm temperatures in Wide Bay.

Of the forage fishes, eulachon were caught most frequently and in greatest abundance on the survey. They are an important prey item for marine mammals as well as other fish species, however little is known of the eulachon population structure in Alaska. The catch of eulachon

averaged 7.8 kg per km towed in 2003, which was the highest figure recorded in the history of the small-mesh trawl survey database (Figure 22). Multiple age classes were present with sizes ranging from 8 to 24 cm. The mean length of 17.7 cm was 1.0 cm larger than the previous year (Figure 23). Although not part of the sampling protocol, eulachon were often checked for sex. About 95% of the fish captured on the small-mesh survey were males. This finding was surprising to the researchers onboard and will be formally investigated during future surveys.

Another unexpected finding from the 2003 small-mesh trawl survey was the possible indication of an above average recruitment event for Pacific herring at the south end of Kodiak Island (Figure 24). Small fish 9 to 11 cm were encountered in high numbers relative to other sizes (Figure 25). Small-mesh trawl survey hauls have also shown increases in the number of spiny dogfish in recent years (Figure 26). The 2003 rate of 4.8 kg per km towed has been the highest incidence observed since the surveys began. Rarely encountered prior to 1998, the small sharks occurred in 66% of the samples and were found throughout the region (Figure 27).

Perhaps the greatest value of this survey is the continuation of the time series for small-mesh trawl samples. Marine fishery management is moving away from a single species approach based on static oceanographic conditions that do not, in practice, exist. It is now recognized that effective and sustainable use of resources requires more understanding of ecosystem processes and how they are affected by changing environmental and human influences. Foremost in research priorities must be the continuation of systematic studies of the marine ecosystem if the effects of those influences are to be examined. The small-mesh trawl survey series has documented species composition of shrimp and fish in the Gulf of Alaska for over 30 years and will continue to provide important clues for researchers trying to understand the ecology of the North Pacific Ocean.

The next small-mesh trawl survey in the Westward Region is scheduled for September 2004. Commercial shrimp fishing sections in the Kodiak, Chignik and South Peninsula Districts will be the focus of that sampling effort.

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Table 1. Shrimp biomass indices from the Westward Region Shrimp Fishery Management Plan, 1982.

District	Section	RBI ^a	MABI ^b
Kodiak	Kiliuda Bay	5,989	2,405
	Two Headed Island	8,258	3,312
	Ugak Bay	4,537	1,815
	Alitak Bay (Strata 2)		
	Pink Shrimp	2,405	962
	All species	4,855	1,942
	Alitak Flats (Strata 3)	3,176	1,270
	Marmot Island	28,993	11,615
	Inner Marmot Bay	4,128	1,652
	Chiniak Bay	1,637	658
	Uganik Bay	2,931	1,175
	Uyak Bay	3,621	1,447
	Wide Bay	1,184	476
	Puale Bay	1,352	540
Chignik	Chignik Bay	5,159	2,064
	Kujulik Bay	4,288	1,715
	Mitrofanina Island	5,853	2,341
	Ivanof Bay	6,466	2,586
	Chiganagak Bay	780	313
	Aniakchak Bay	3,267	1,307
	Nakolilok Bay	926	372
	Kuiukta Bay	2,160	862
South Peninsula	Stepovak Bay	26,302	10,526
	Unga Straits	8,530	3,412
	West Nagai	7,473	2,976
	Beaver Bay	4,946	1,978
	Pavlof Bay	20,554	8,221
	Morzhovoi Bay	12,160	4,864

^a Representative Biomass Index (metric tons)

^b Minimum Acceptable Biomass Index (metric tons)

Table 2. Relative abundance by weight of the top 20 species, percentage of shrimp, and percentage of forage fish occurrence in the 2003 Westward Region small-mesh trawl survey.

Rank	Common Name	Scientific Name	Percent of Catch by Weight
1	Walleye pollock	<i>Theragra chalcogramma</i>	34.0 %
2	Flathead sole	<i>Hippoglossoides elassodon</i>	14.0 %
3	Arrowtooth flounder	<i>Atheresthes stomias</i>	12.8 %
4	Northern pink shrimp	<i>Pandalus borealis</i>	11.6 %
5	Cyanea jellyfish	<i>Cyanea</i> sp.	6.3 %
6	Pacific cod	<i>Gadus macrocephalus</i>	3.7 %
7	Eulachon	<i>Thaleichthys pacificus</i>	3.6 %
8	Spiny dogfish	<i>Squalus acanthias</i>	2.2 %
9	Pacific Sandfish	<i>Trichodon trichodon</i>	1.6 %
10	Sidestriped shrimp	<i>Pandalopsis dispar</i>	1.1 %
11	Big skate	<i>Raja binoculata</i>	0.8 %
12	Pacific halibut	<i>Hippoglossus stenolepis</i>	0.6 %
13	Rex sole	<i>Glyptocephalus zachirus</i>	0.5 %
14	Starry flounder	<i>Platichthys stellatus</i>	0.5 %
15	Humpy shrimp	<i>Pandalus goniurus</i>	0.5 %
16	Longnose skate	<i>Raja rhina</i>	0.5 %
17	Pacific sleeper shark	<i>Somniosus pacificus</i>	0.4 %
18	Pacific tomcod	<i>Microgadus proximus</i>	0.4 %
19	Yellowfin sole	<i>Pleuronectes asper</i>	0.3 %
20	Rougheye rockfish	<i>Sebastes aleutianus</i>	0.3 %
All other shrimp species			
	Glass shrimp	<i>Pasiphaea pacifica</i>	0.12 %
	Common crangon	<i>Crangon communis</i>	0.07 %
	Ridged crangon	<i>Crangon dalli</i>	<0.01 %
	Arctic argid	<i>Argis dentata</i>	<0.01 %
	Eualus sp.	<i>Eualus</i> sp.	<0.01 %
	Barbed eualid	<i>Eualus barbatus</i>	<0.01 %
	Spot shrimp	<i>Pandalus platyceros</i>	<0.01 %
	Coonstriped shrimp	<i>Pandalus hypsinotus</i>	<0.01 %
	Spirontocaris sp.	<i>Spirontocaris</i> sp.	<0.01 %
	Argis sp.	<i>Argis</i> sp.	<0.01 %
	Spiny lebbeid	<i>Lebbeus groenlandicus</i>	<0.01 %
	Dock shrimp	<i>Pandalus danae</i>	<0.01 %
	Yellowleg pandalid	<i>Pandalus tridens</i>	<0.01 %
All other forage fish species			
	Pacific herring	<i>Clupea pallas arengus</i>	0.23 %
	Longsnout prickleback	<i>Lumpenella longirostris</i>	0.20 %
	Capelin	<i>Mallotus villosus</i>	<0.01 %
	Rainbow smelt	<i>Osmerus mordax</i>	<0.01 %
	Snake prickleback	<i>Lumpenus sagitta</i>	<0.01 %
	Daubed shanny	<i>Lumpenus maculatus</i>	<0.01 %
	Deepsea smelt	Family Bathylagidae	<0.01 %
All other animals		90 species	3.67 %

Table 3. Fish measurements from the 2003 Westward Region small-mesh trawl survey.

Common Name	Number Measured	Mean Length (cm)	Estimated Number Caught	Estimated Total Catch (kg)
Alaska plaice	32	46.8	80	106.5
Alaska skate	1	41.0	1	3.6
Aleutian skate	19	44.3	19	108.6
Arrowtooth flounder	2,176	37.7	8,884	7,183.9
Bering skate	44	26.4	44	52.3
Big skate	28	61.5	28	432.1
Butter sole	2	34.5	14	5.1
Capelin	83	10.5	219	1.5
Dark dusky rockfish	1	14.0	1	0.1
Dover sole	66	34.3	283	138.5
English sole	2	38.5	4	2.3
Eulachon	3,796	17.7	44,376	1,888.2
Flathead sole	4,043	29.0	27,378	7,619.9
Light dusky rockfish	18	35.3	20	20.7
Lingcod	10	26.4	10	3.9
Longnose skate	33	51.1	33	235.8
Northern rockfish	2	19.5	3	0.7
Northern rock sole	50	33.8	181	96.2
Pacific cod	201	63.2	308	965.7
Pacific cod (juvenile)	38	12.5	129	3.0
Pacific cod (tagged)	353	62.9	353	994.5
Pacific halibut	95	60.7	95	388.5
Pacific herring	1,313	15.1	5,049	120.2
Pacific Ocean perch	6	31.5	15	6.3
Pacific sleeper shark	2	135.0	2	222.0
Pacific tomcod	889	12.7	13,720	197.7
Pink salmon	1	25.0	3	0.6
Redbanded rockfish	7	33.3	7	5.1
Rex sole	276	29.3	1,166	276.3
Rougheye rockfish	124	36.9	129	158.4
Sablefish	114	44.4	118	137.7
Saffron cod	50	31.0	127	35.4
Southern rock sole	1	32.0	3	0.9
Spiny dogfish	338	87.5	351	1,175.5
Starry flounder	37	53.7	96	245.4
Walleye pollock	4,553	35.3	24,391	17,086.9
Walleye pollock (juvenile)	4,865	10.7	78,595	782.8
Yellowfin sole	127	32.0	361	165.5

Table 4. Shrimp population estimates from the 2003 Westward Region small-mesh trawl survey.

Survey Area	Stratum	No. Tows	Kg/Km	Sq. Km	Std. Error	Pop. Estimate (mt)
Inner Marmot Bay	2	8	42.1	106.2	23.6	458
	3	2	22.1	5.1	10.93	11
Section Total						469
Marmot Island	2	2	47.6	28.8	5.79	140
	3	3	58.2	52.5	27.7	313
	5	6	54.2	171.5	19.37	953
Section Total						1406
Chiniak Bay	2	1	34.3	10.5	-	36
	3	3	14.1	20.5	9.03	29
	4	1	6.1	7.0	-	4
	5	2	12.2	13.8	2.65	17
Section Total						86
Kiliuda Bay	2	2	0.6	13.7	0.25	0
	3	5	19.8	72.1	8.13	146
Section Total						146
Wide Bay	2	6	129.8	25.1	88.33	334
	3	1	0.4	3.2	-	0
Wide Bay Total						334
Ugak Bay	2	3	0.7	41.3	0.32	2
	3	3	0.1	54.2	0.05	0
Section Total						2
Uyak Bay	2	2	51.9	24.1	15.45	128
	3	6	51.1	58.1	15.67	304
	4	1	1.8	6.7	-	1
	5	1	1.1	2.8	-	0
Section Total						433
Twoheaded Island	2	9	0.3	131.3	0.11	3
Alitak Bay	2	12	7.8	155.3	4.64	123
Kukak Bay	2	5	28.4	22.0	11.5	64
	3	2	1.5	21.2	1.08	3
Section Total						67
Shelikof Strait	1	30	28.5	2,915.4	3.07	8,527

-Continued-

Table 4. (page 2 of 2)

Survey Area	Stratum	No. Tows	Kg/Km	Sq. Km	Std. Error	Pop. Estimate (mt)
Puale Bay	1	4	12.3	32.24	1.61	40
Alitak Flats	3	9	4.5	268.56	0.76	30
Uganik Bay	2	1	0.1	2.33	-	0
	3	4	72.9	43.29	7.95	323
	4	1	1.3	5.21	-	0
	5	2	40.1	19.45	22.54	79
Section Total						<u>402</u>

Table 5. Sidestriped shrimp population estimates from the 2003 Westward Region small-mesh trawl survey.

Survey Area	Stratum	No. Tows	Kg/Km	Sq. Km	Std. Error	Pop. Estimate (mt)
Inner Marmot Bay	2	8	0.5	106.2	0.26	5
	3	2	0.7	5.1	0.20	0
Section Total						5
Marmot Island	2	2	4.9	28.8	0.86	14
	3	3	0.1	52.5	0.08	0
	5	6	3.1	171.5	1.05	55
Section Total						69
Chiniak Bay	2	1	0.3	10.5	-	0
	3	3	1.6	20.5	0.98	3
	4	1	0.1	7.0	-	0
	5	2	1.7	13.8	0.96	2
Section Total						5
Kiliuda Bay	2	2	0.0	13.7	-	0
	3	5	0.0	72.1	-	0
Section Total						0
Wide Bay	2	6	0.0	25.1	-	0
	3	1	0.6	3.2	0.62	0
Wide Bay Total						0
Ugak Bay	2	3	0.0	41.3	-	0
	3	3	0.0	54.2	-	0
Section Total						0
Uyak Bay	2	2	0.9	24.1	0.52	2
	3	6	3.6	58.1	1.23	21
	4	1	0.1	6.7	-	0
	5	1	0.0	2.8	-	0
Section Total						23
Twoheaded Island	2	9	0.0	131.3	-	0
Alitak Bay	2	12	2.6	155.3	2.01	41
Kukak Bay	2	5	11.0	22.0	4.47	24
	3	2	0.1	21.2	0.05	0
Section Total						24
Shelikof Strait	1	30	5.3	2,915.4	0.42	1,572

-Continued-

Table 5. (page 2 of 2)

Survey Area	Stratum	No. Tows	Kg/Km	Sq. Km	Std. Error	Pop. Estimate (mt)
Puale Bay	1	4	0.1	32.24	0.1	0
Alitak Flats	3	9	0.0	268.56	-	0
Uganik Bay	2	1	0.0	2.33	-	0
	3	4	2.7	43.29	0.48	12
	4	1	0.0	5.21	-	0
	5	2	1.8	19.45	1.65	3
Section Total						15

Table 6. Minimum acceptable biomass indices (MABI) and shrimp population estimates in metric tons from surveyed Westward Region fishing sections, 1995-2003.

District	Section	MABI ^a	Survey Year				
			2003	2002	2001	1998	1995
Kodiak	Inner Marmot Bay	1,652	469	573	1,173	218	517
	Marmot Island	11,615	1,406	1,356	1,685	222	-
	Chiniak Bay	658	86	57	333	45	82
	Ugak Bay	1,815	2	-	42	-	-
	Kiliuda Bay	2,405	146	198	56	73	54
	Two Headed Island	3,312	3	-	56	63	54
	Alitak Bay	1,942	123	-	232	113	9
	Uyak Bay	1,447	433	-	344	154	195
	Uganik Bay	1,175	402	-	711	127	485
	Kukak Bay ^b	NA	67	-	187	45	14
	Wide Bay ^b	476	334	791	906	-	32
	Puale Bay ^b	540	40	-	48	-	-
	Shelikof Strait ^c	NA	8,527	-	1,056	-	-
	Alitak Flats	577	30	-	-	-	-
Chignik	Kujulik Bay	1,715	-	12	-	-	-
	Chignik Bay	2,064	-	508	-	-	454
	Kuiukta Bay	862	-	163	-	-	163
	Mitrofanina Island	2,341	-	99	-	-	-
	Ivanof Bay	2,586	-	9	-	-	-
South Peninsula	Stepovak Bay	10,526	-	375	-	-	-
	Unga Straits	3,412	-	137	-	-	-
	Beaver Bay	1,978	-	11	-	-	-
	Pavlof Bay	8,221	-	36	30	59	15
	Belkofski Bay	NA	-	1			

^a Minimum acceptable biomass index

^b Wide, Kukak, and Puale Bays are part of the Mainland Section; MABIs are established for

^c Area surveyed in the Shelikof Strait is inconsistent between years.

NA = no MABI established for survey area.

- = Not surveyed in that year.

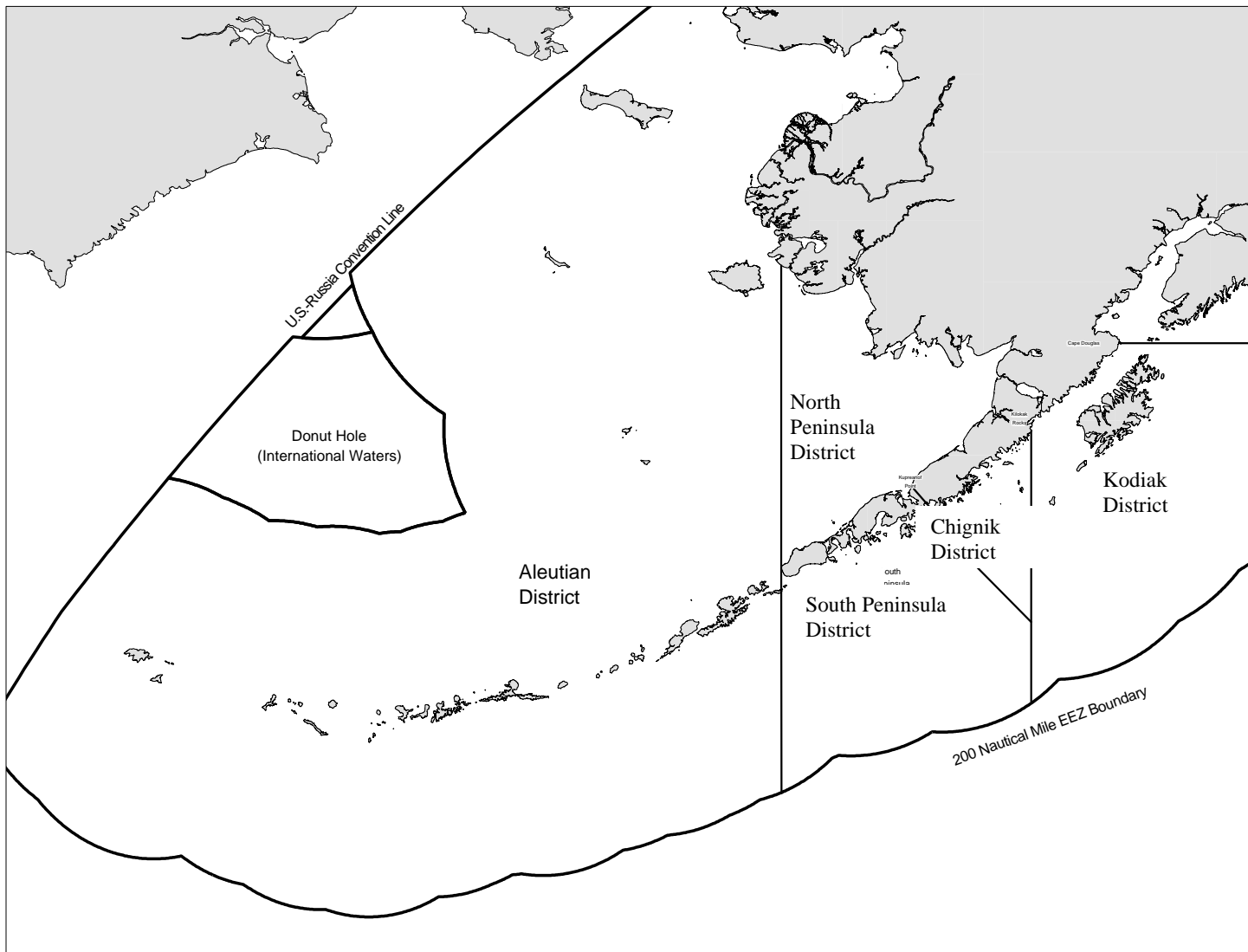


Figure 1. Commercial shrimp fishing districts of Westward Registration Area J.

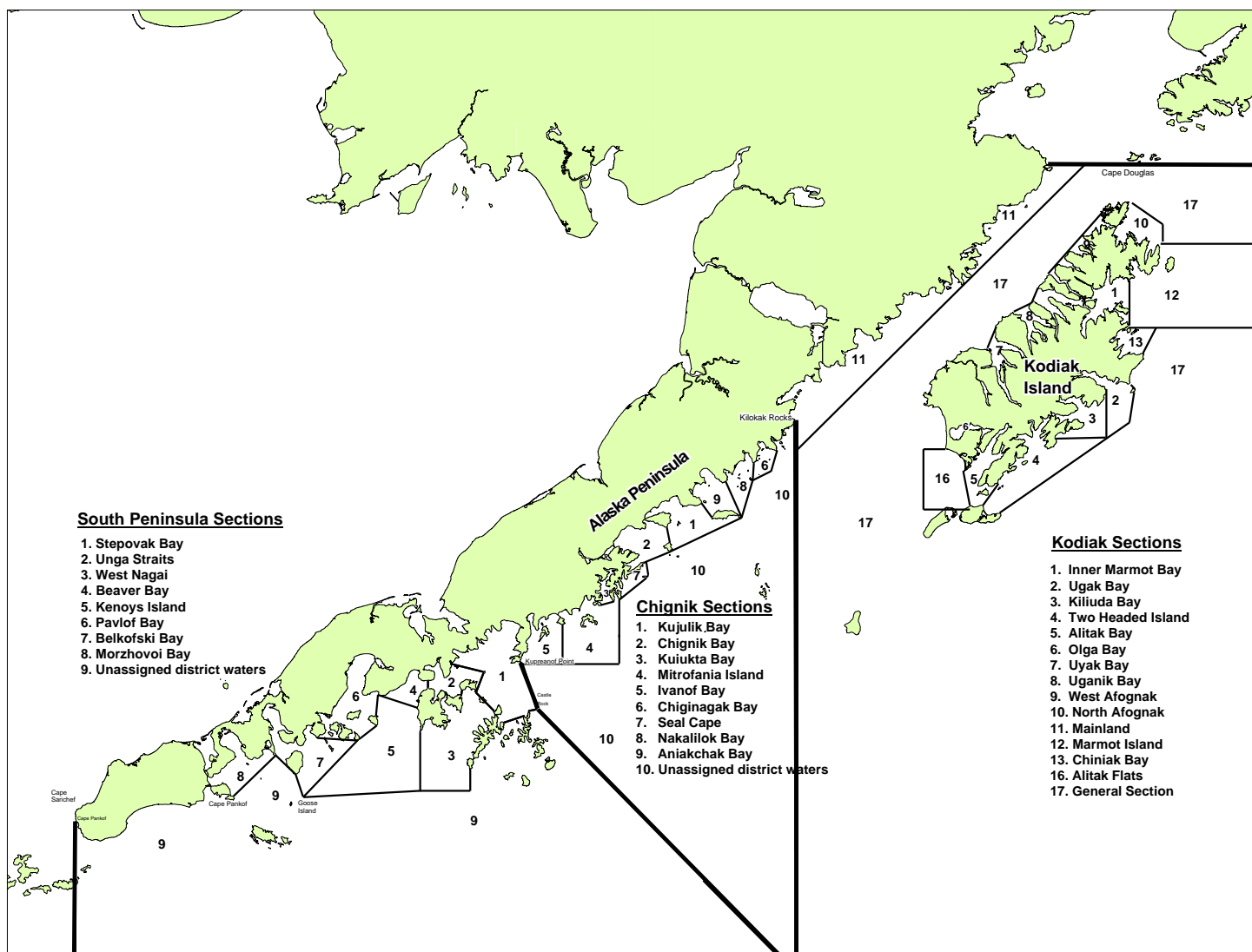


Figure 2. Commercial shrimp fishing sections in the Kodiak, Chignik and South Peninsula Districts of Westward Area J.

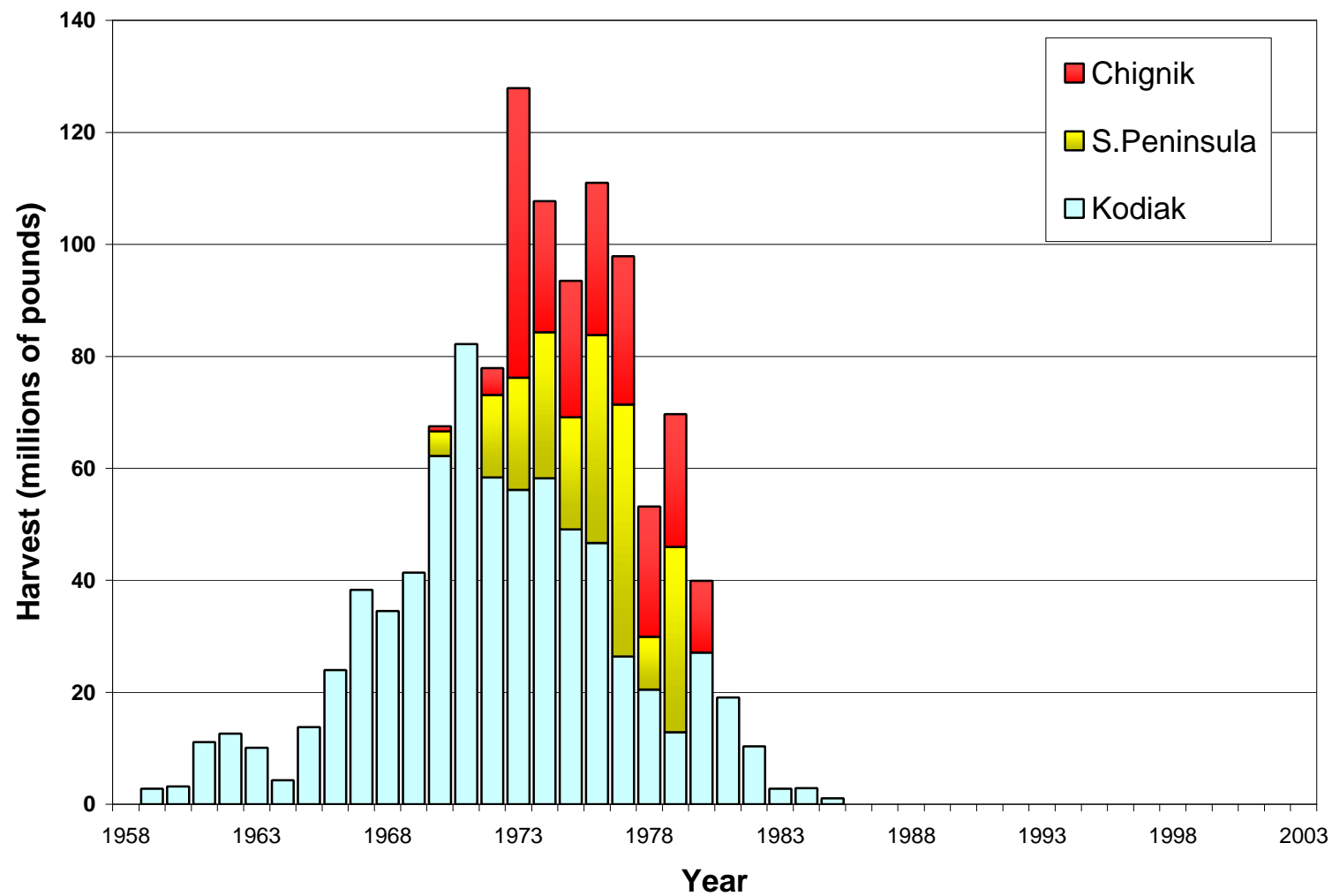


Figure 3. Shrimp harvests from the Kodiak, Chignik and South Peninsula Districts, 1958-2003.

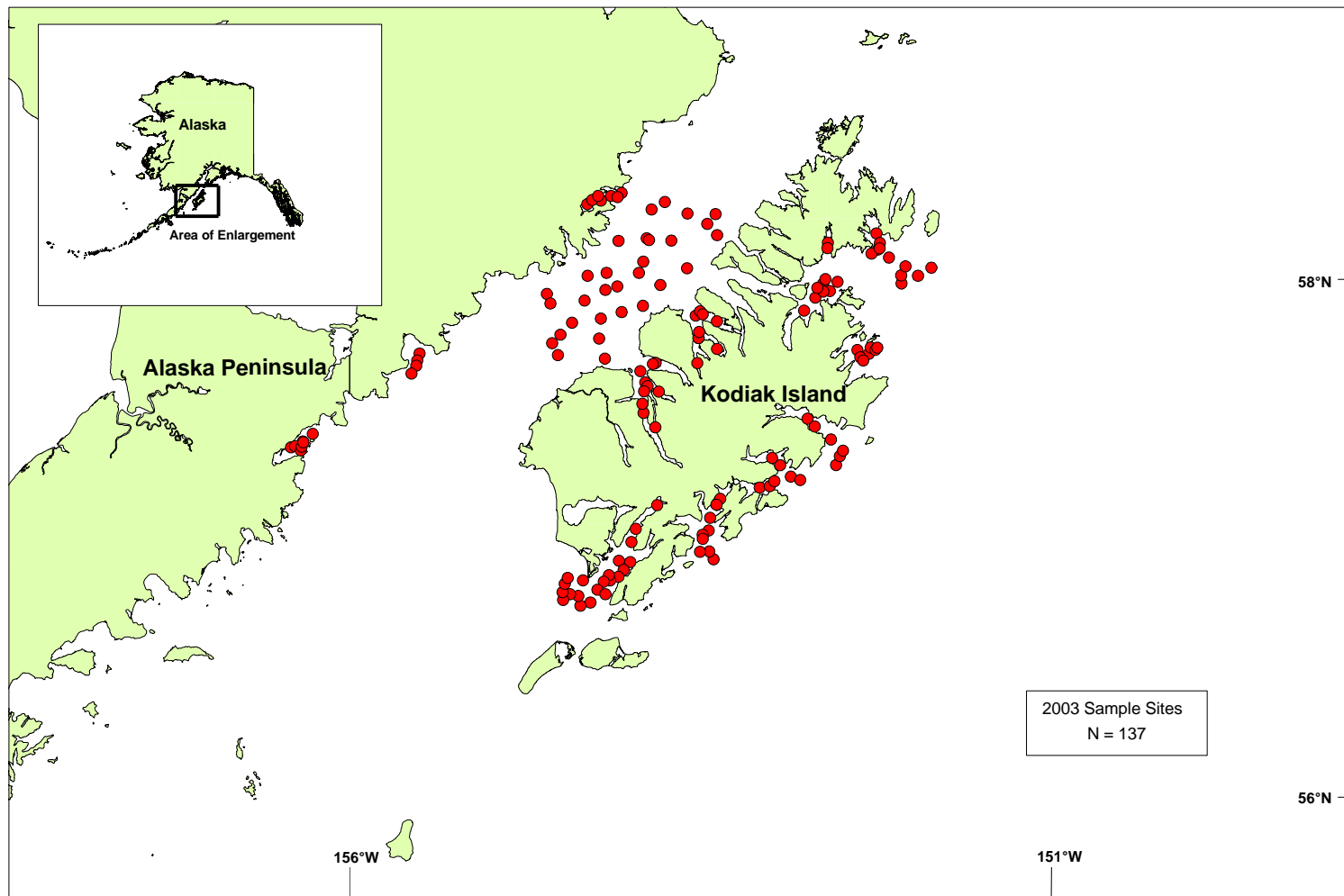


Figure 4. Location of sample sites from the 2003 Westward Region small-mesh trawl survey.

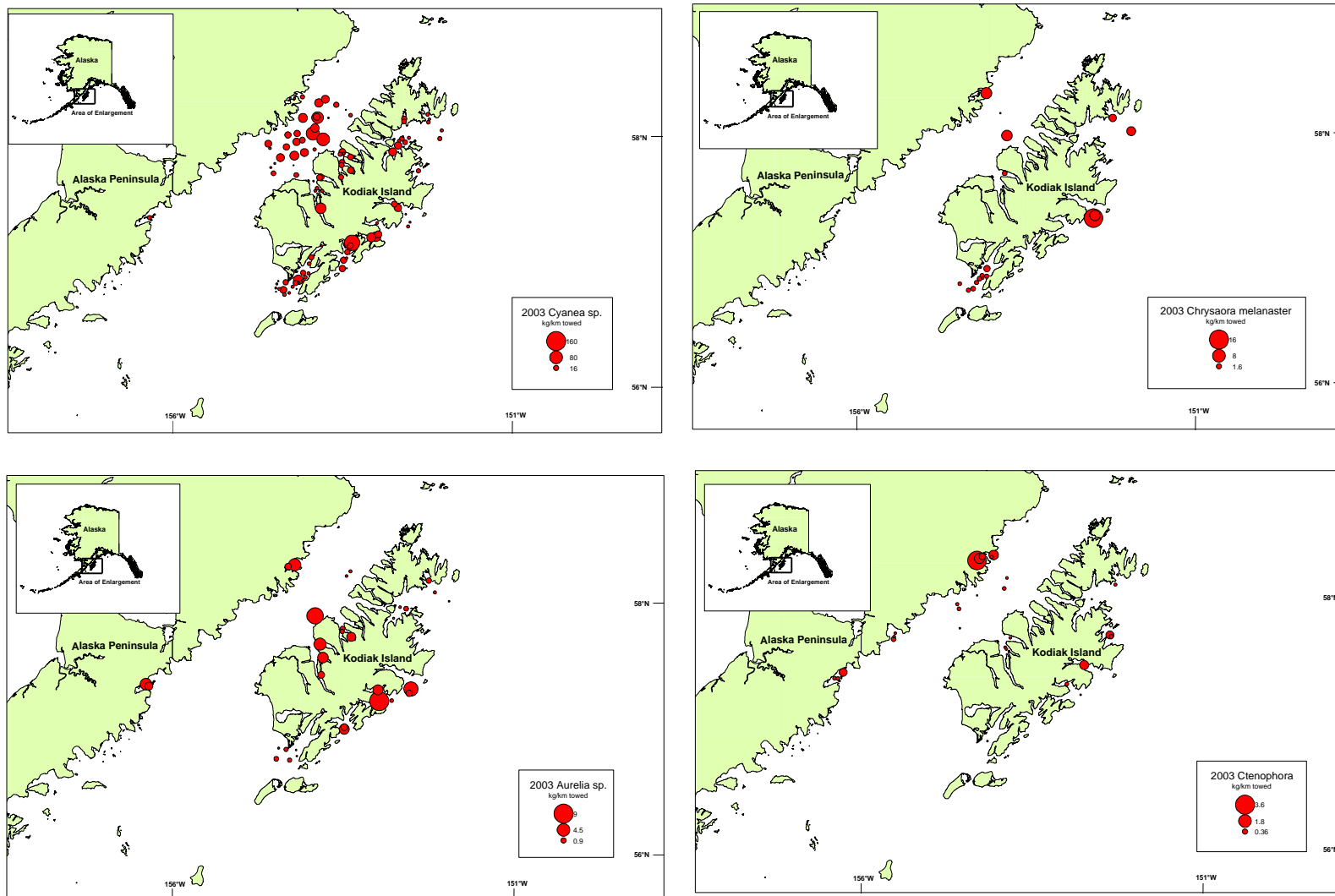


Figure 5. Distribution and relative abundance in kg/km towed of 4 jellyfish groups from the 2003 Westward Region small-mesh trawl survey.

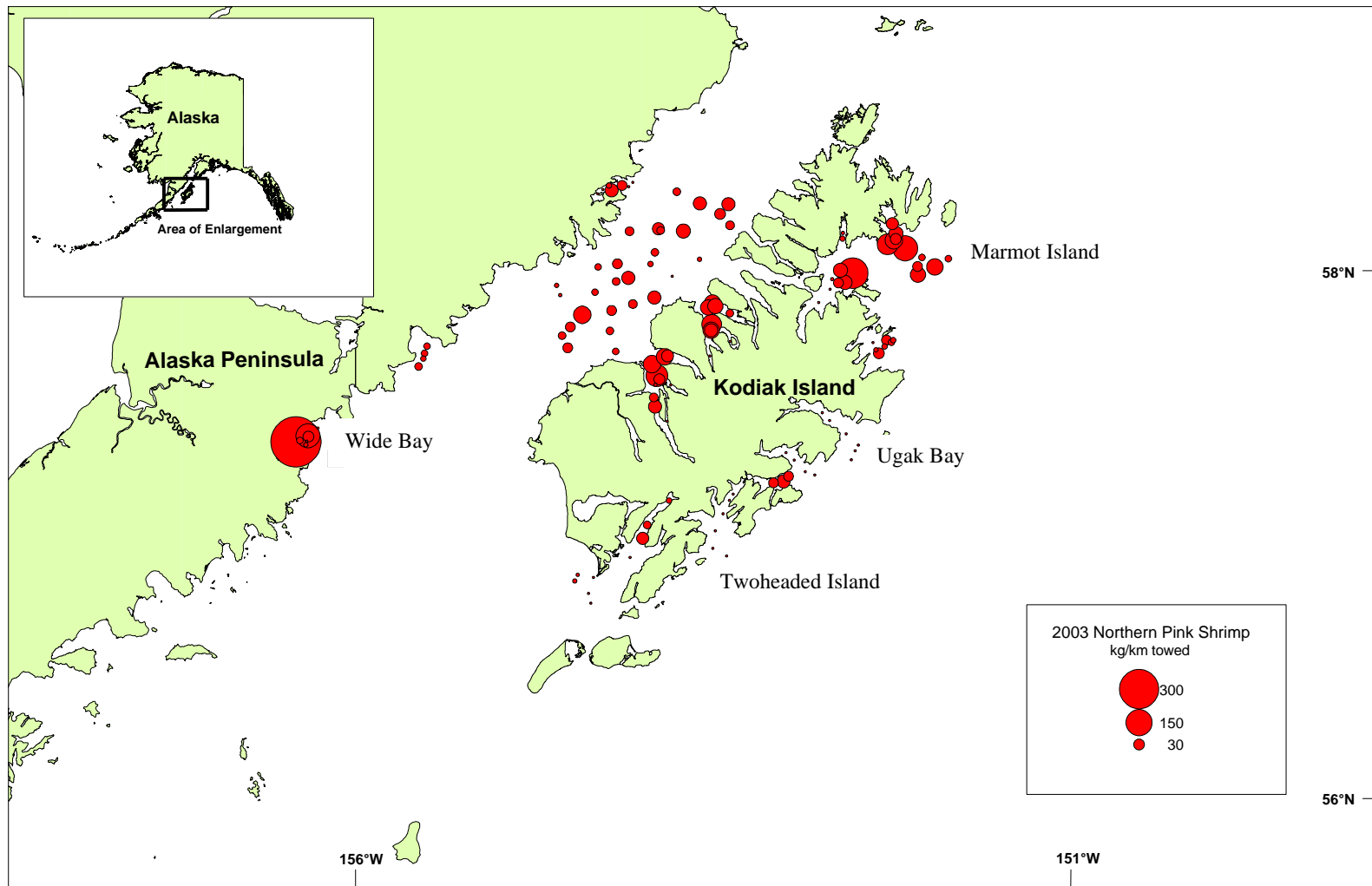


Figure 6. Distribution and relative abundance in kg/km towed of northern pink shrimp from the 2003 Westward Region small-mesh trawl survey.

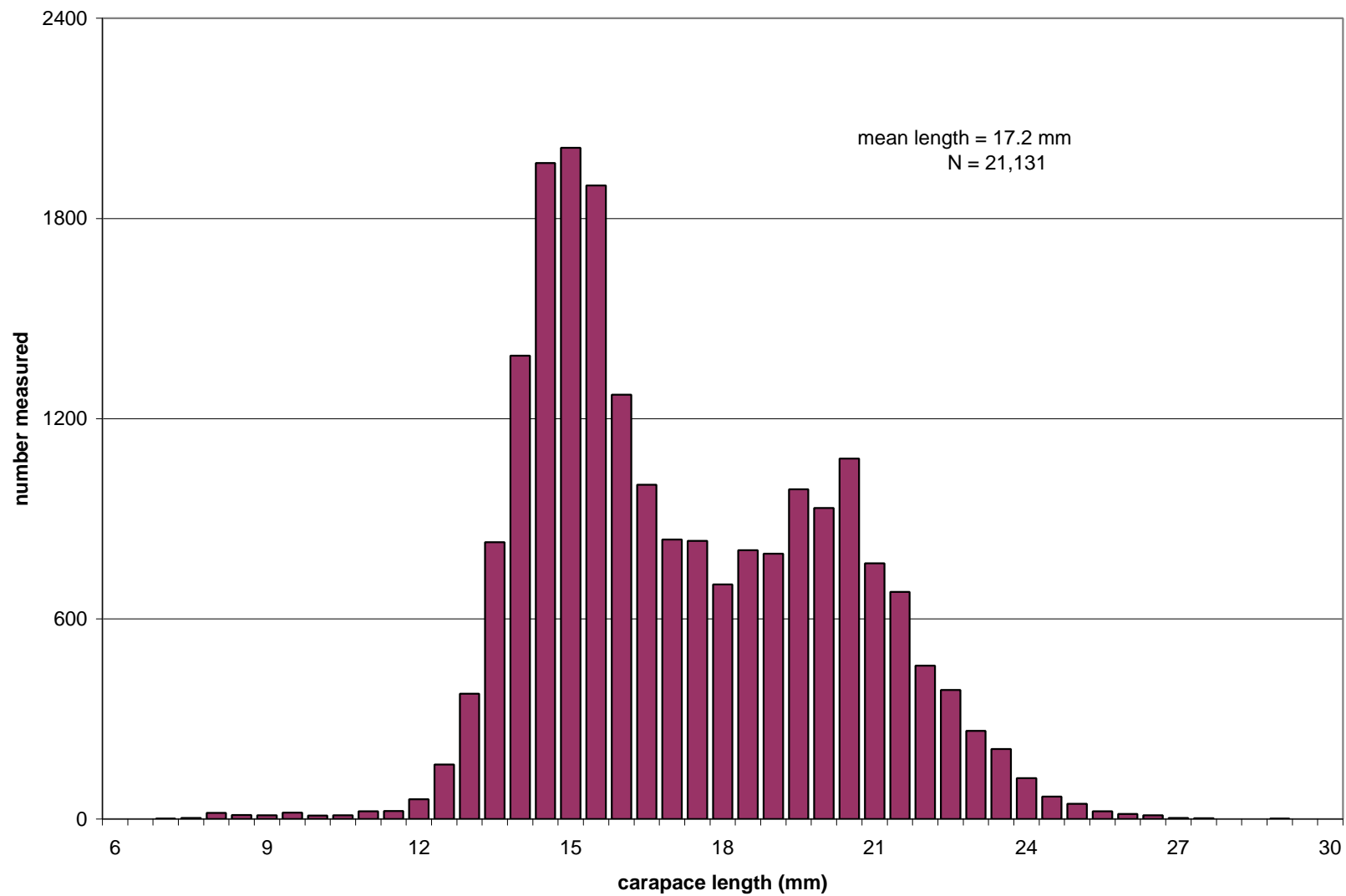


Figure 7. Carapace lengths of northern pink shrimp from the 2003 Westward Region small-mesh trawl survey.

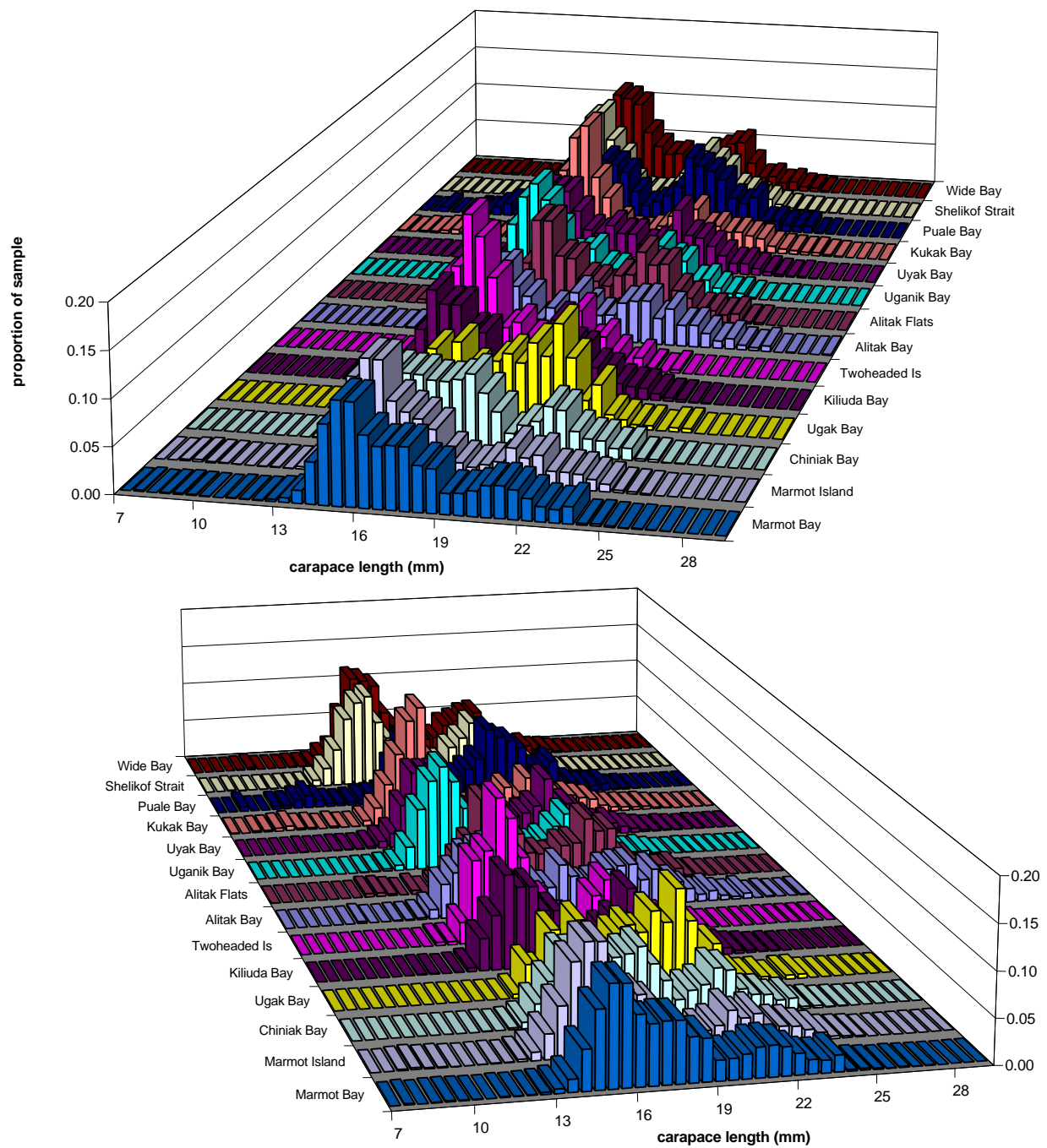


Figure 8. Carapace lengths of northern pink shrimp by commercial fishing section from the 2003 Westward Region small-mesh trawl survey.

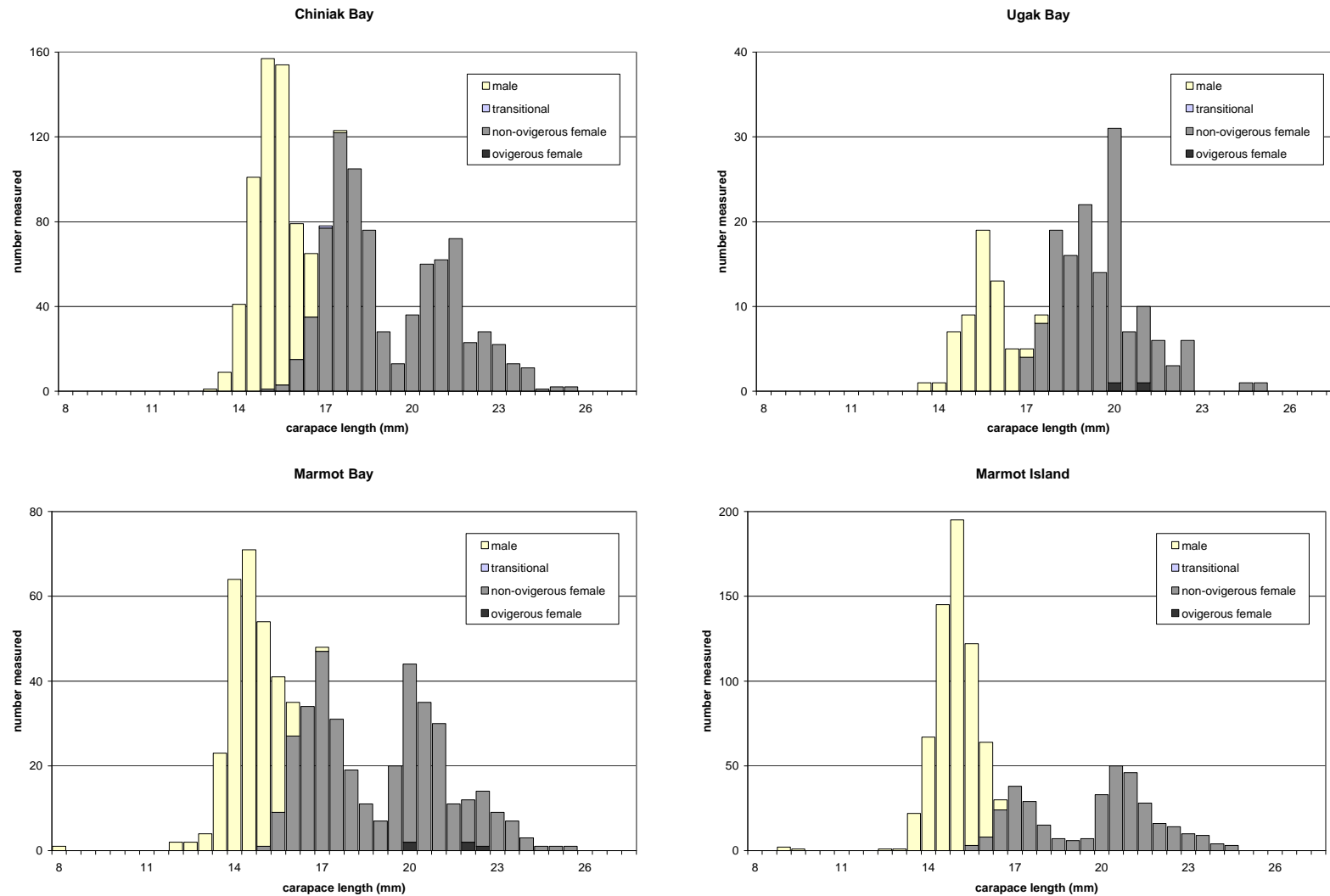


Figure 9. Size composition by sex of northern pink shrimp from the 2003 Westward Region small-mesh trawl survey of the Chiniak Bay, Ugak Bay, Marmot Bay and Marmot Island commercial shrimp fishing sections.

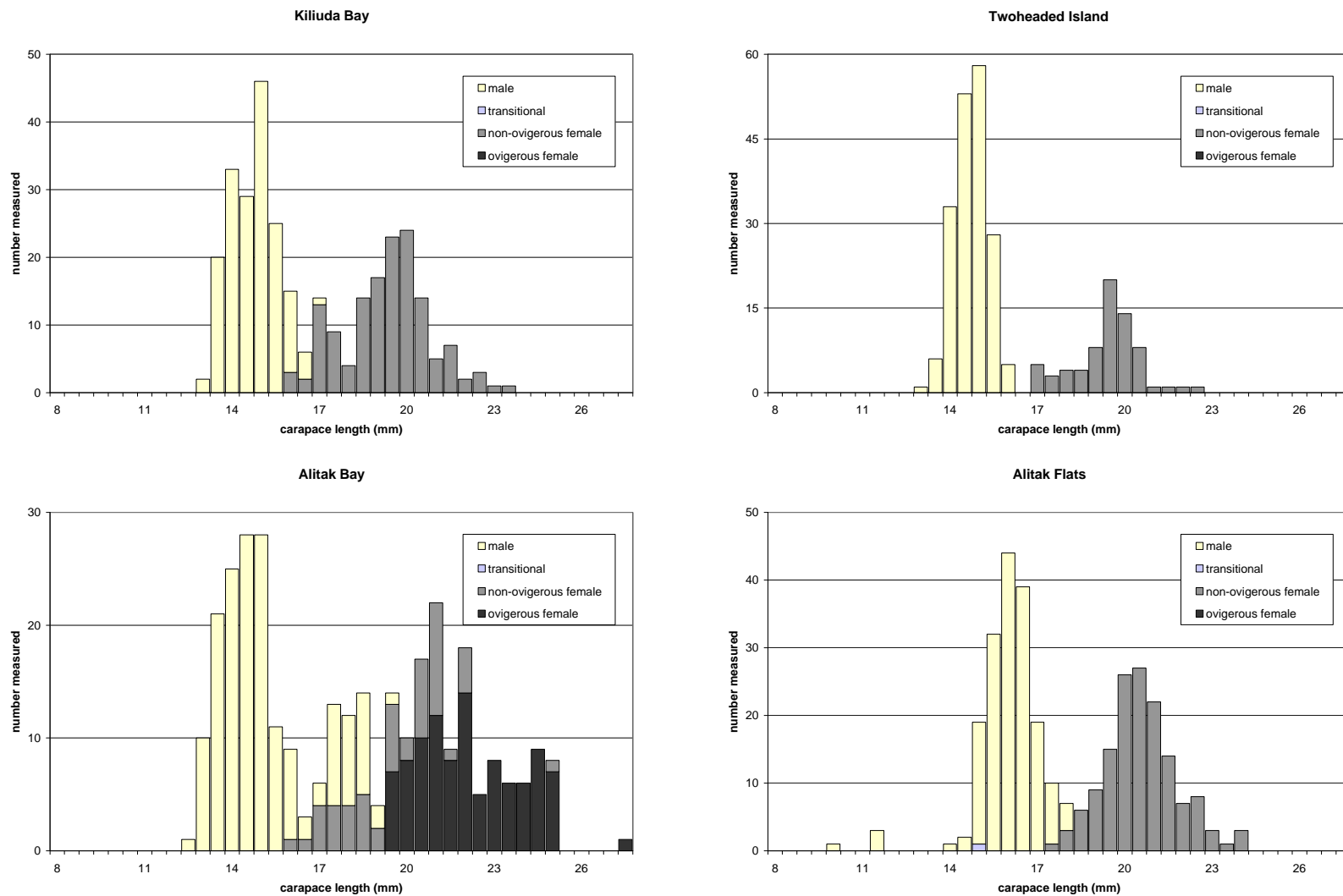


Figure 10. Size composition by sex of northern pink shrimp from the 2003 Westward Region small-mesh trawl survey of the Kiliuda Bay, Twoheaded Island, Alitak Bay and Alitak Flats commercial shrimp fishing sections.

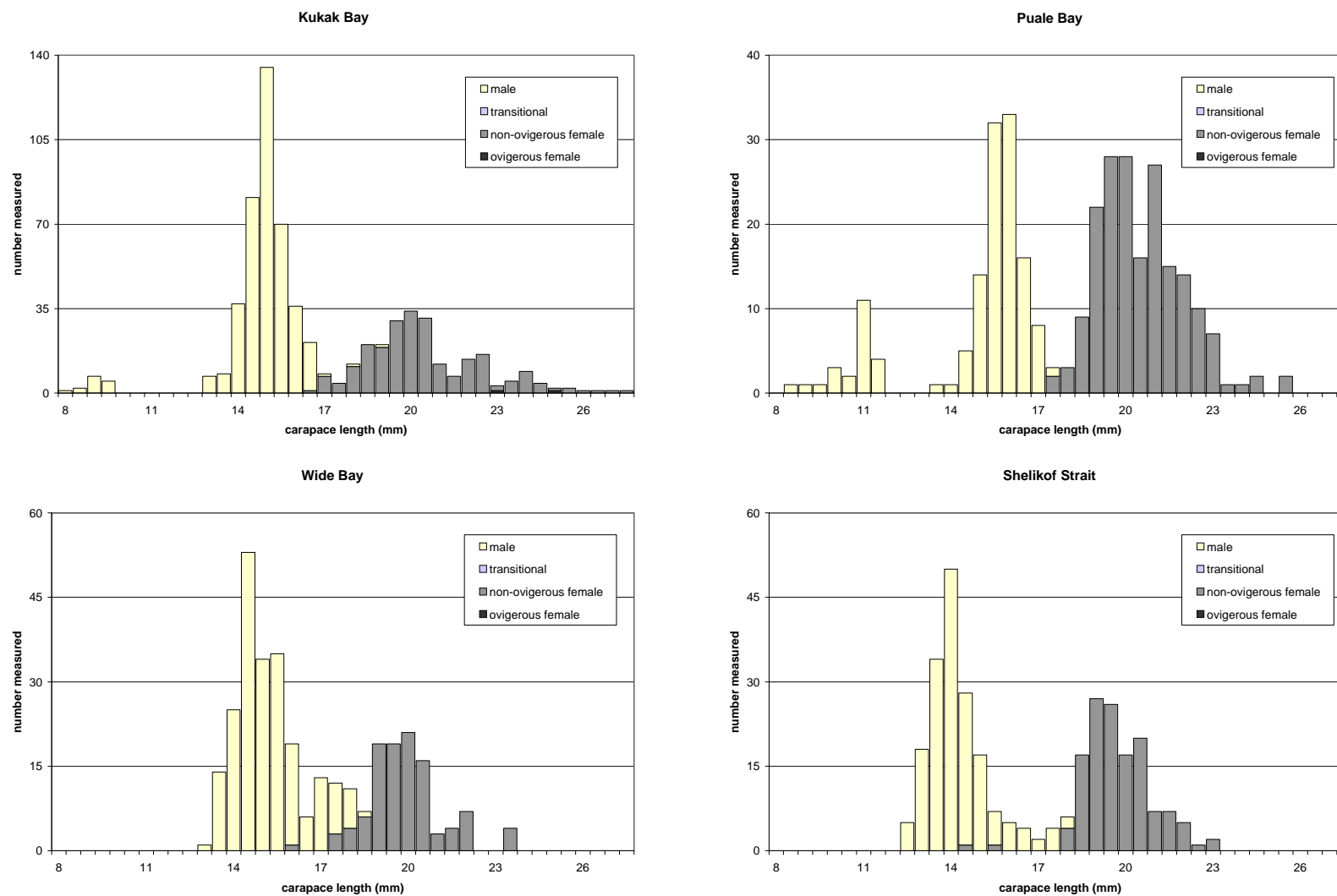


Figure 11. Size composition by sex of northern pink shrimp from the 2003 Westward Region small-mesh trawl survey of Kukak Bay, Wide Bay, Puale Bay and Shelikof Strait..

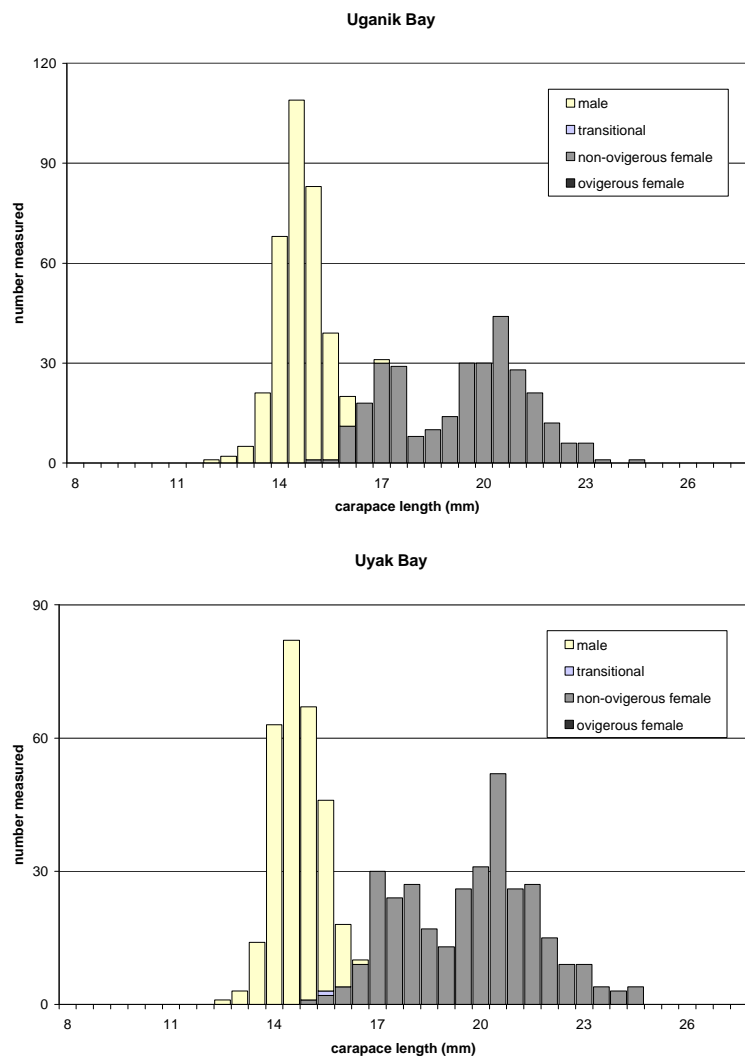


Figure 12. Size composition by sex of northern pink shrimp from the 2003 Westward Region small-mesh trawl survey of the Uganik Bay and Uyak Bay commercial shrimp fishing sections.

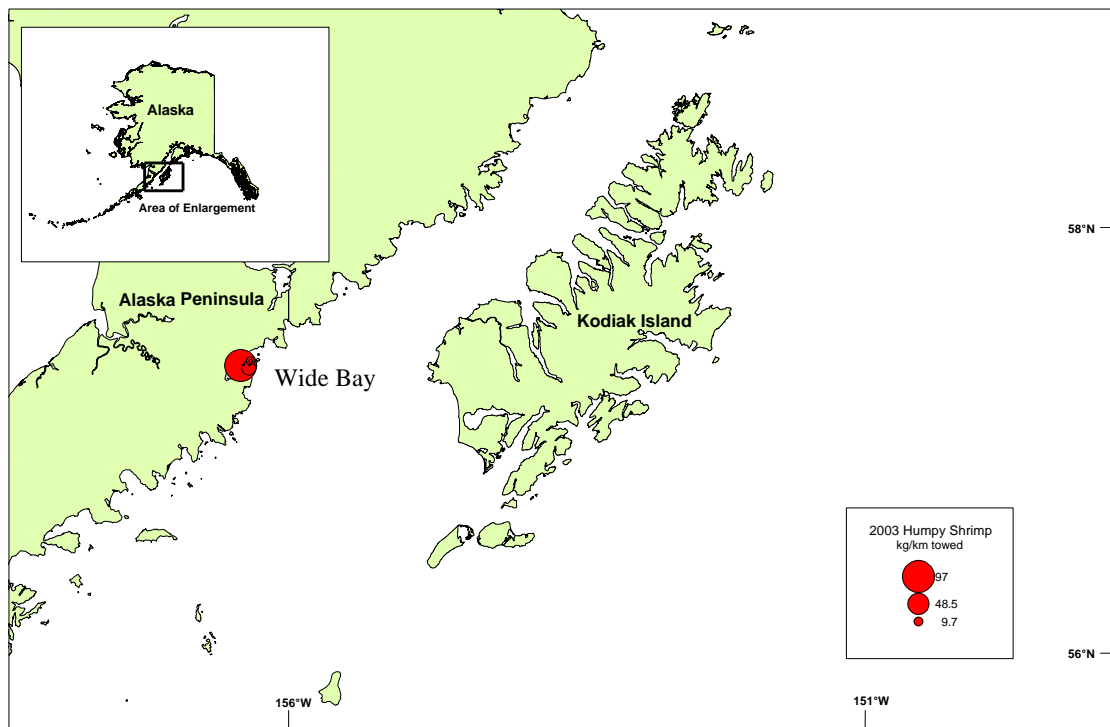


Figure 13. Distribution and relative abundance in kg/km towed of humpy shrimp from the 2003 Westward Region small-mesh trawl survey.

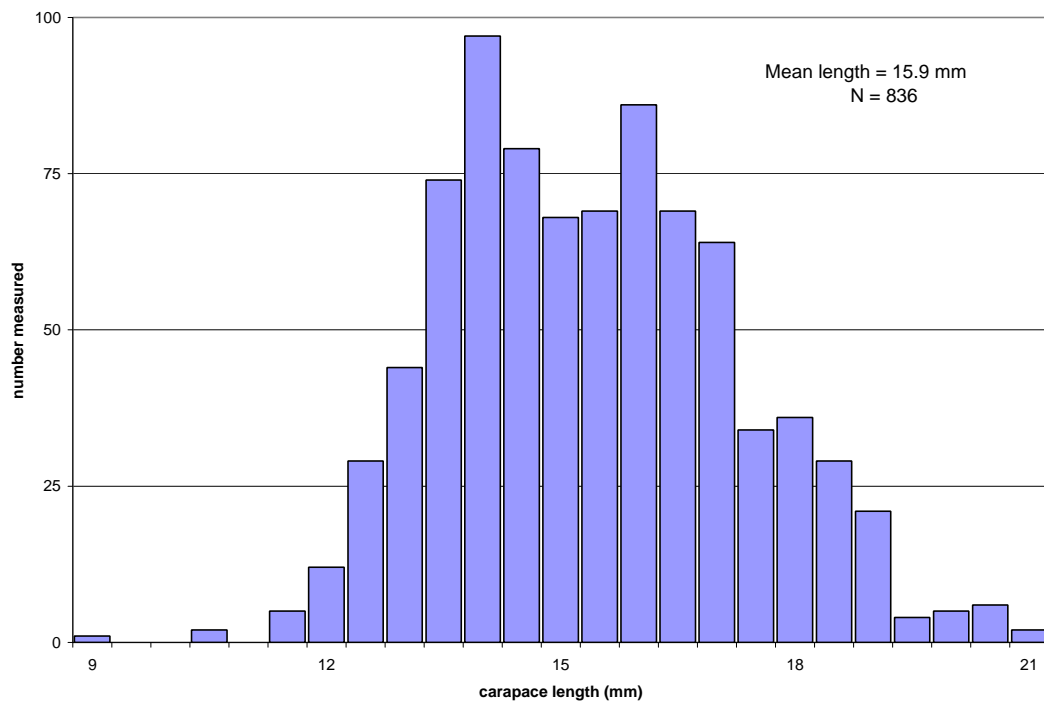


Figure 14. Carapace lengths of humpy shrimp from the 2003 Westward Region small-mesh trawl survey.

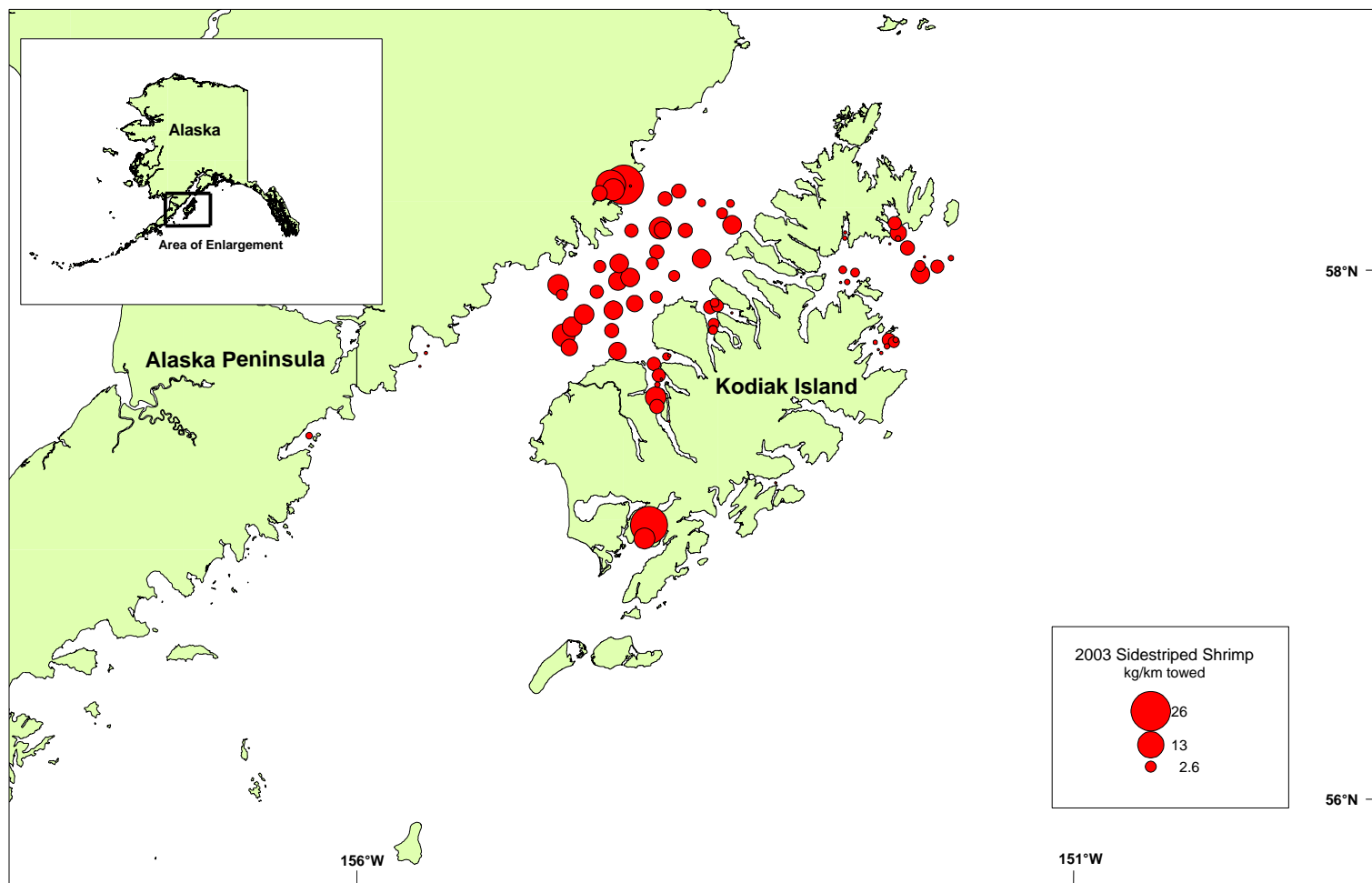


Figure 15. Distribution and relative abundance in kg/km towed of sidestriped shrimp from the 2003 Westward Region small-mesh trawl survey.

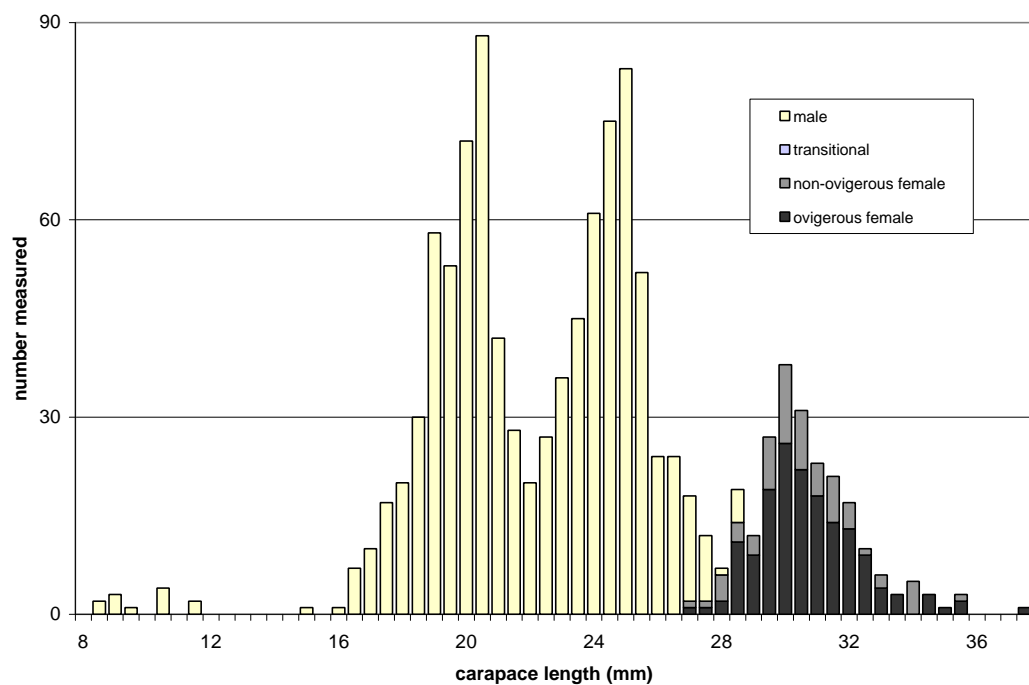
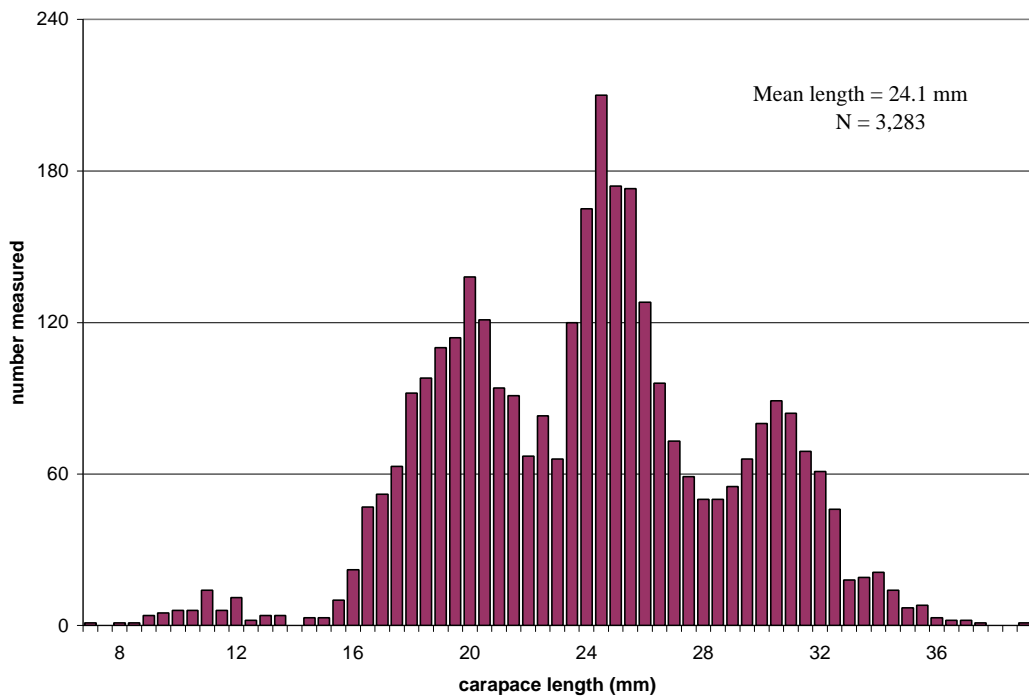


Figure 16. Carapace lengths and size by sex composition of sidestriped shrimp from the 2003 Westward Region small-mesh trawl survey.

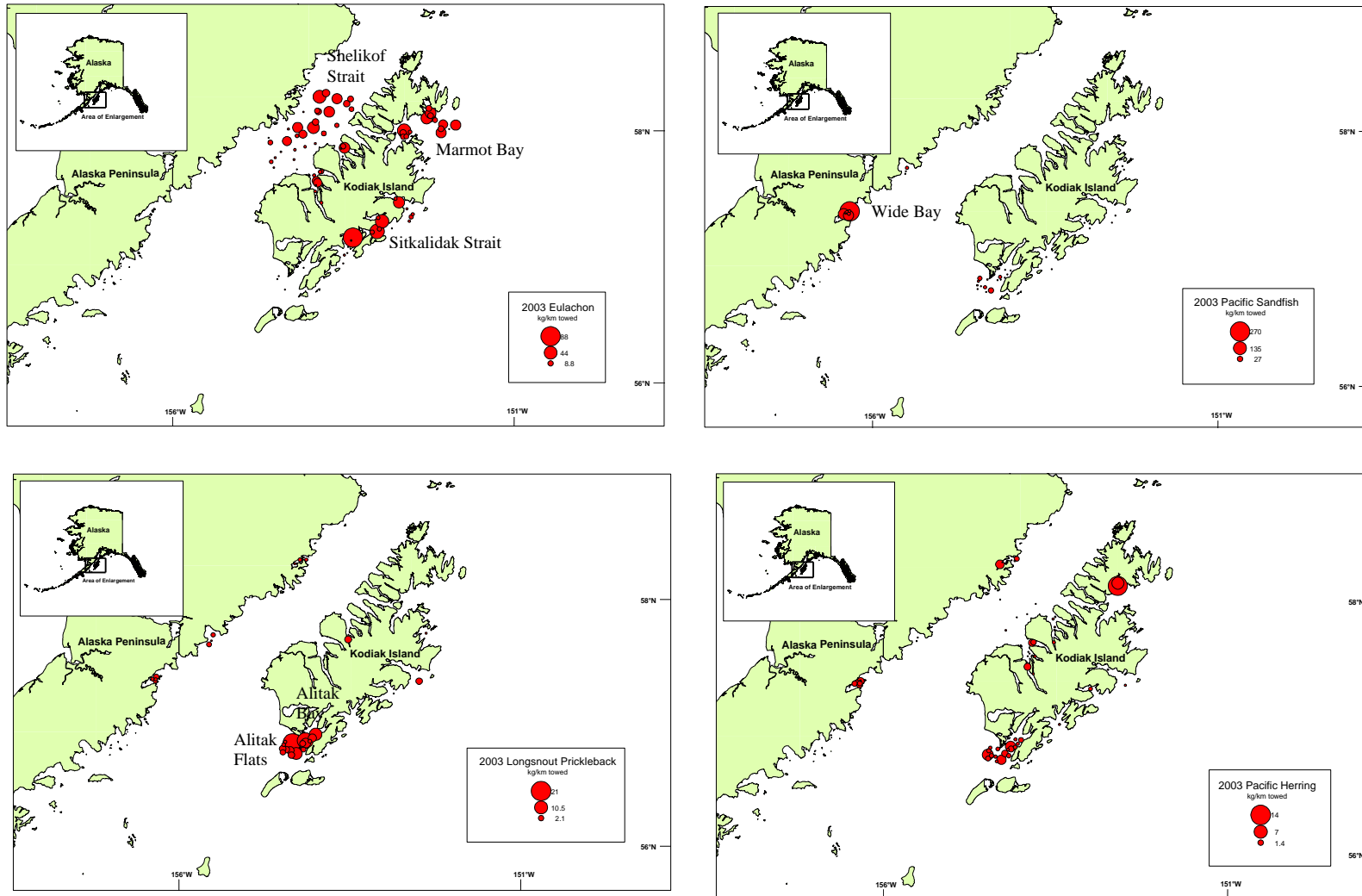


Figure 17. Distribution and relative abundance in kg/km towed of eulachon, Pacific sandfish, longsnout prickleback and Pacific herring from the 2003 Westward Region small-mesh trawl survey.

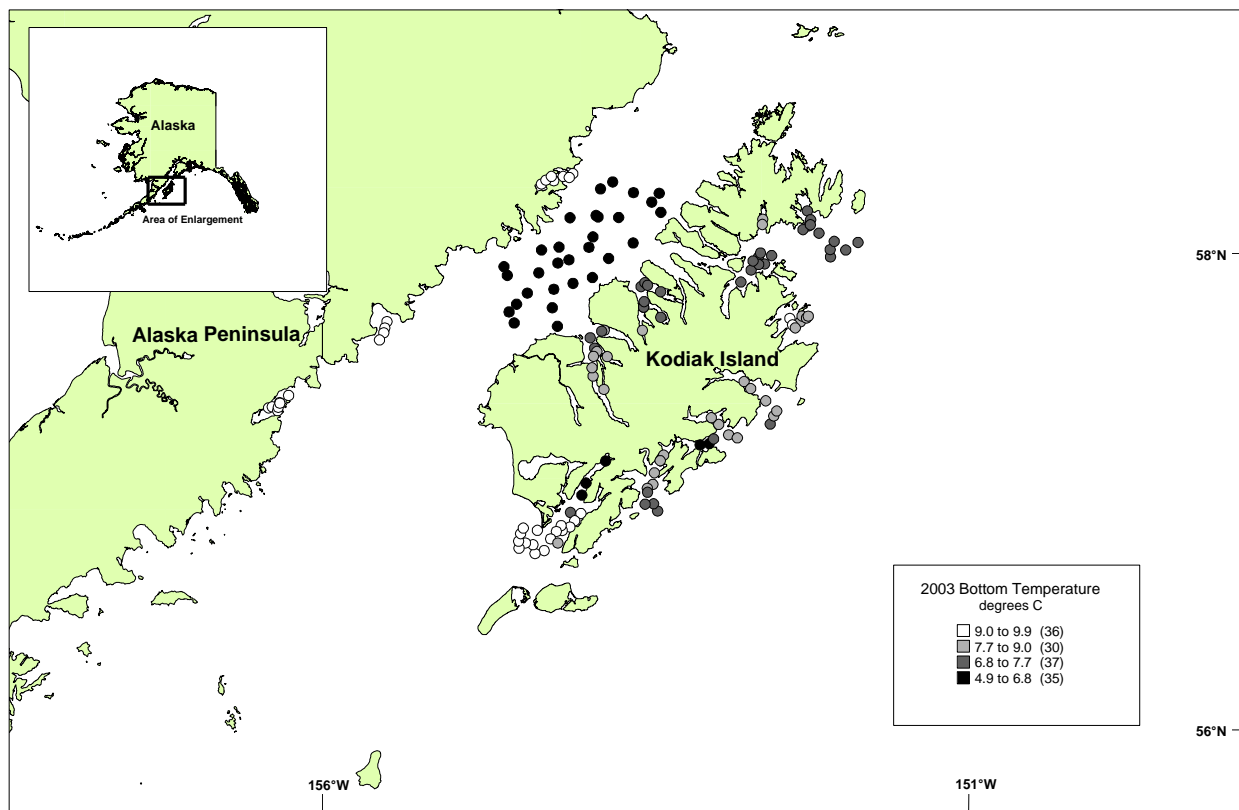


Figure 18. Ocean bottom temperatures from the 2003 Westward Region small-mesh trawl survey.

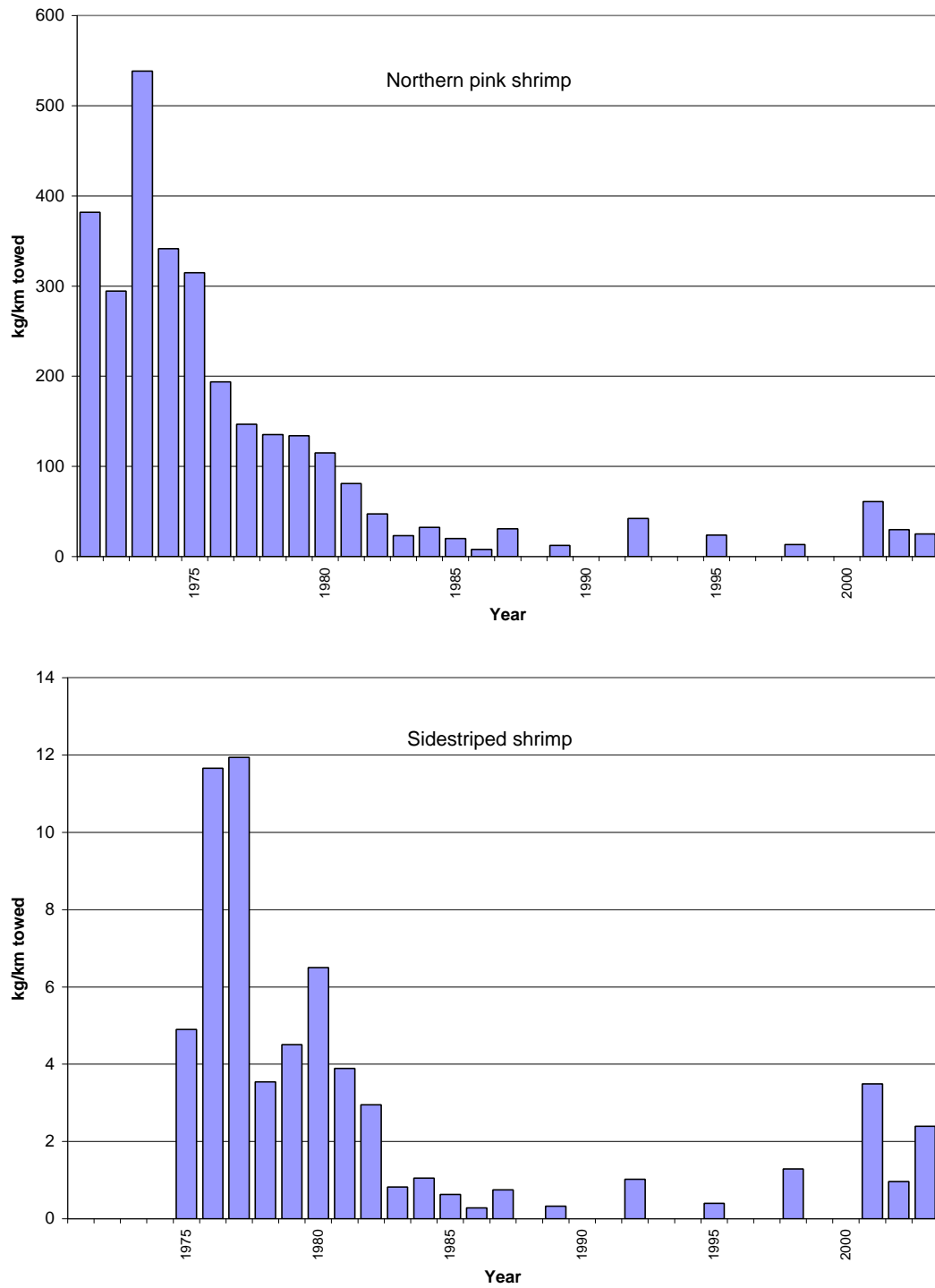


Figure 19. Relative abundance in kg/km towed of northern pink shrimp and sidestriped shrimp from the Westward Region small-mesh trawl survey, 1971-2003.

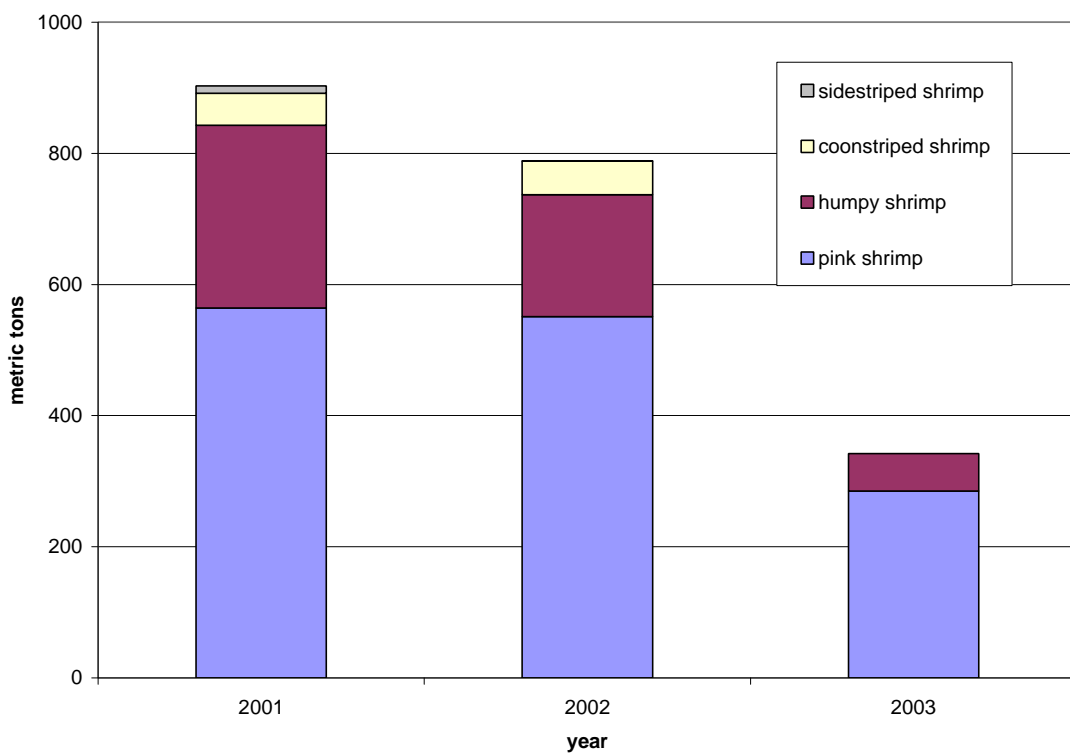


Figure 20. Shrimp abundance estimates from Wide Bay, 2001-2003.

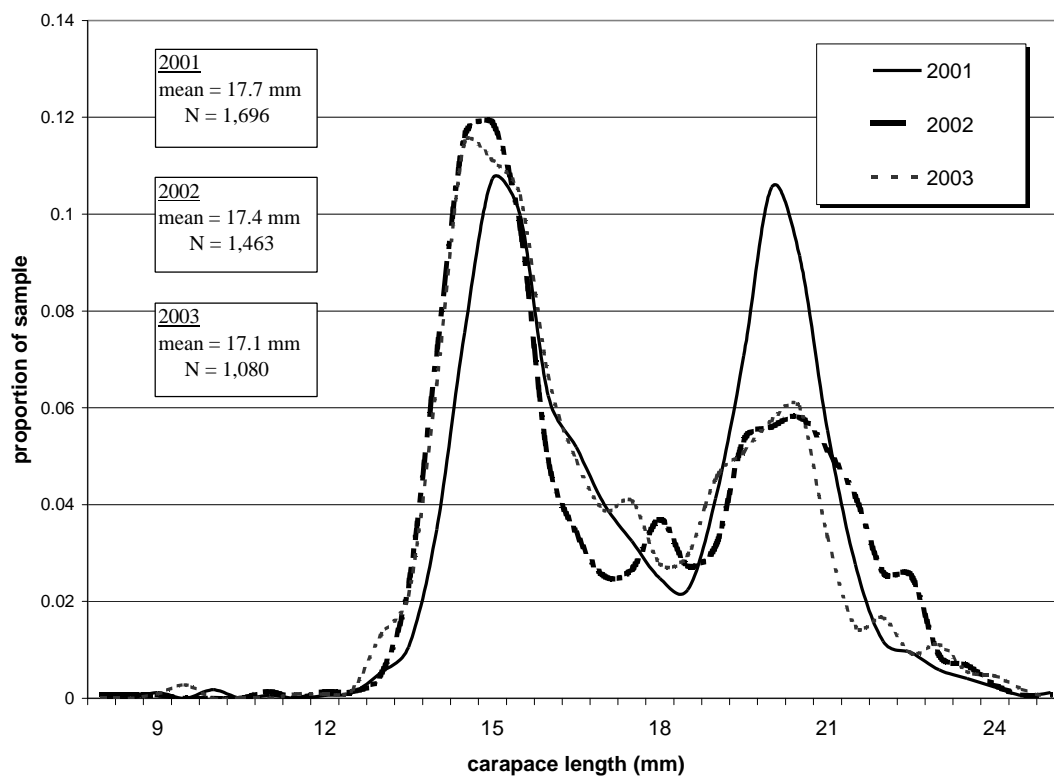


Figure 21. Carapace length of northern pink shrimp from Wide Bay, 2001-2003.

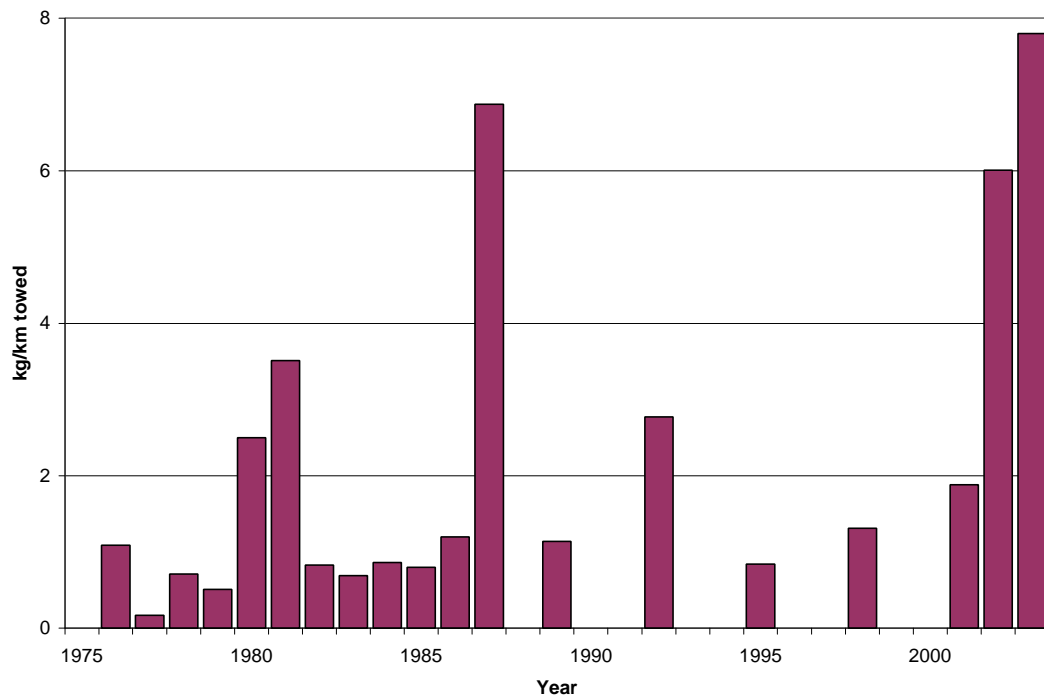


Figure 22. Relative abundance in kg/km towed of eulachon from the Westward Region small-mesh trawl survey, 1976-2003.

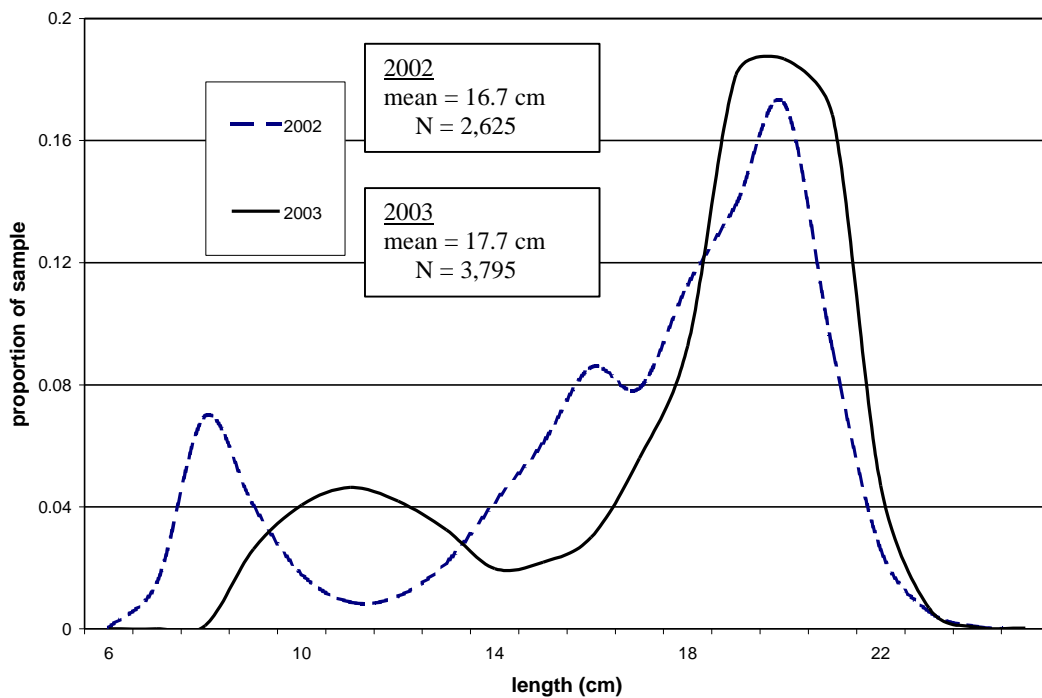


Figure 23. Length of eulachon from the Westward Region small-mesh trawl survey, 2002-2003.

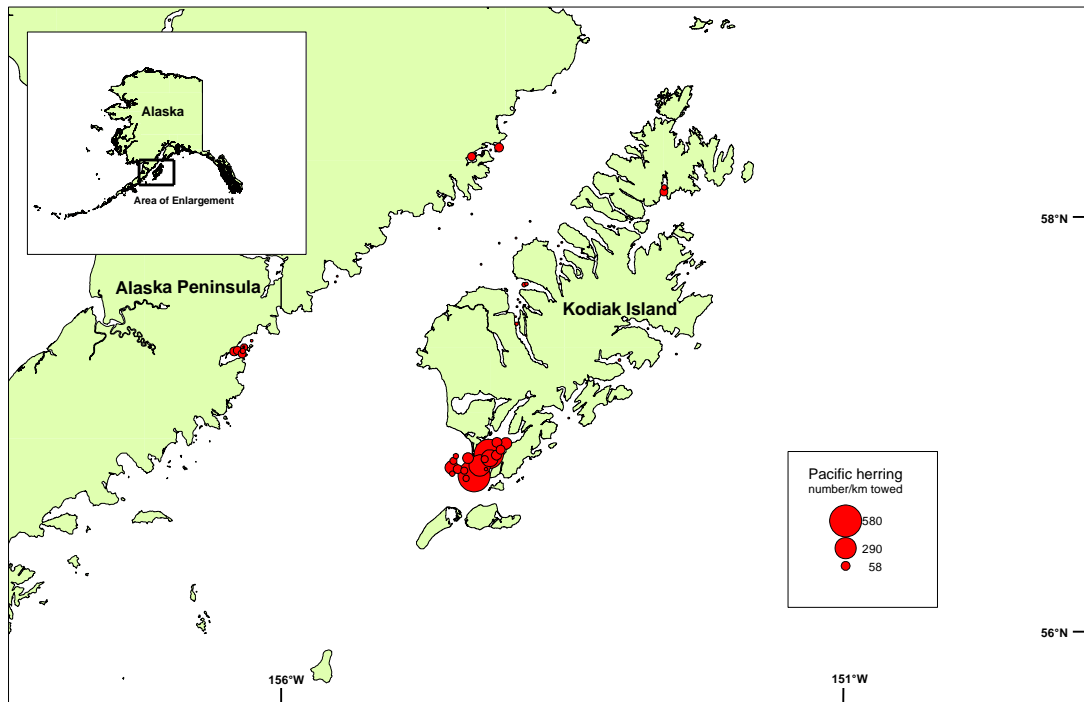


Figure 24. Distribution and relative abundance in number/km towed of Pacific herring from the 2003 Westward Region small-mesh trawl survey.

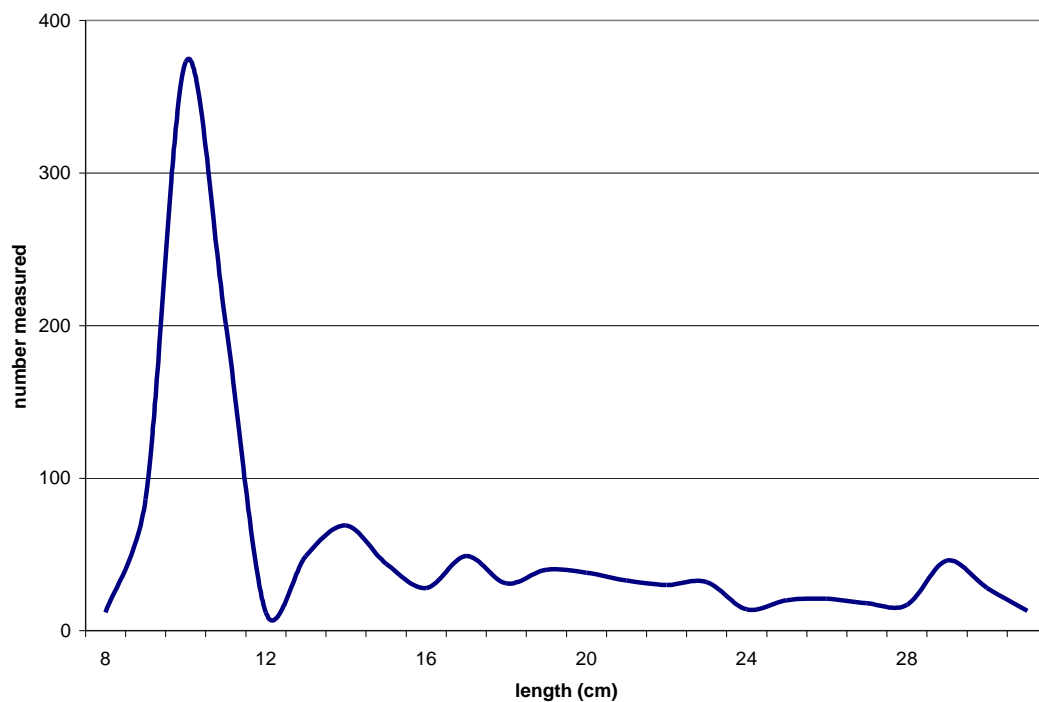


Figure 25. Length of Pacific herring from the 2003 Westward Region small-mesh trawl survey.

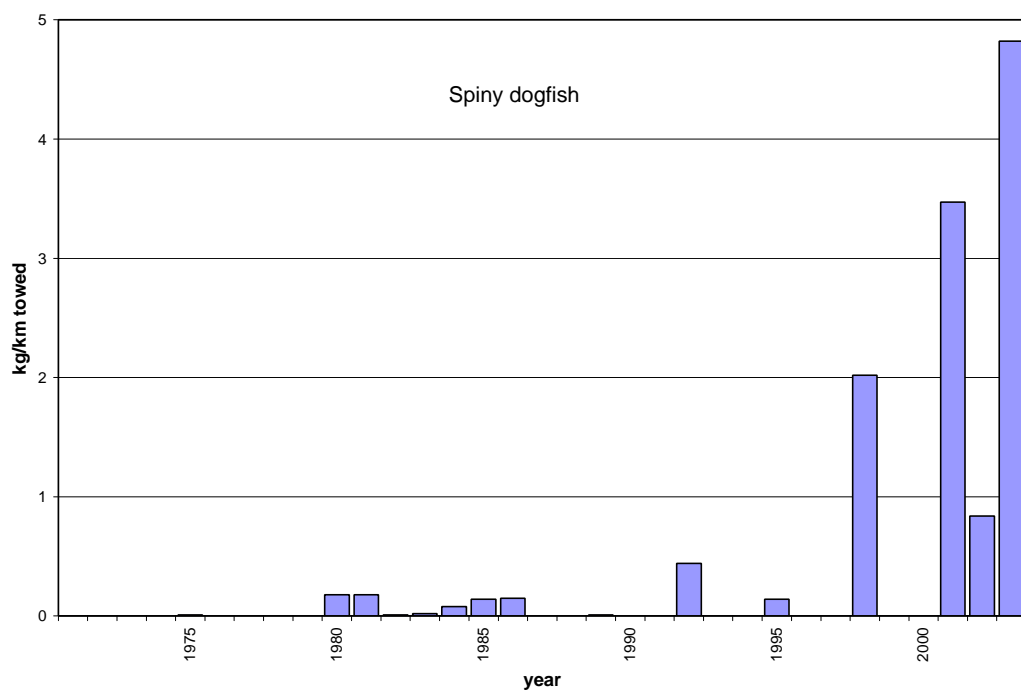


Figure 26. Relative abundance in kg/km towed of spiny dogfish from the Westward Region small-mesh trawl survey, 1974-2003.

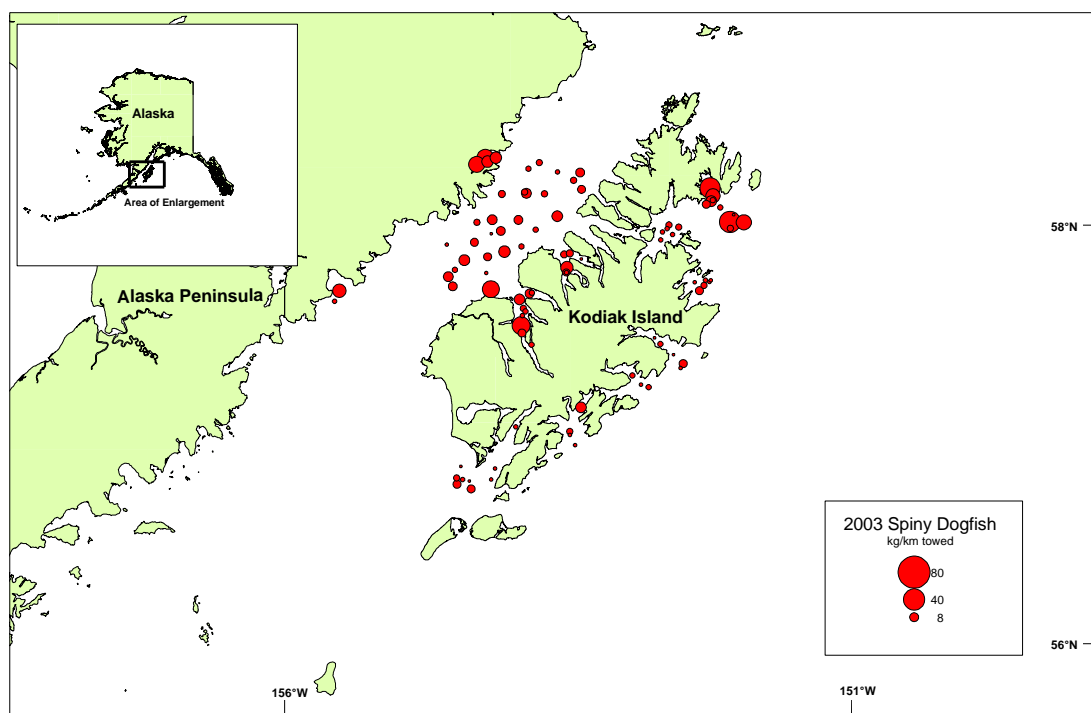


Figure 27. Distribution and relative abundance in kg/km towed of spiny dogfish from the 2003 Westward Region small-mesh trawl survey.

APPENDIX

Appendix A. Fishing log and catch data from the 2003 Westward Region small-mesh trawl survey.

Haul	1	2	3	4	5	6	7	8	9	10
Location	Chiniak	Chiniak	Chiniak	Chiniak	Chiniak	Chiniak	Chiniak	Shelikof	Shelikof	Shelikof
Month/Day/Year	9/29/03	9/29/03	9/29/03	9/29/03	9/30/03	9/30/03	9/30/03	10/2/03	10/2/03	10/2/03
Station	809	811	814	815	801	804	803	226A	201D	202A
Longitude Start	152°17.6	152°16.8	152°14.8	152°14.0	152°22.5	152°21.3	152°20.0	153°22.6	153°26.8	153°23.3
Latitude Start	57°42.7	57°44.2	57°43.7	57°44.2	57°43.6	57°41.9	57°41.2	58°10.2	58°12.8	58°15.0
Heading, Degrees	301	214	58	59	140	45	224	25	14	48
Average Depth (m)	137	144	168	164	0	95	128	213	181	179
Distance Fished (km)	1.9	1.7	1.3	1.9	1.9	1.9	1.9	1.9	1.9	1.9
Bottom Temperature	8.8	8.8	8.8	8.8	9.4	9.3	8.9	5.4	5.4	5.4
Performance	1	1	1	1	1	1	1	1	1	1
	-----kilograms/kilometer-----									
Pollock	22.2	230	24.6	12.5	68.5	20	67.2	11.4	2.4	2.8
Pacific Cod	23.6	7.4	23.1	7.3	5.3	0	27.3	17.2	1.8	1.3
Pacific Sandfish	0	0	0	0	0.4	0.1	0	0	0	0
Eulachon	0	0.3	0	0	0	0	1.1	7.4	13.6	10.5
Capelin	0	0	0	0	0	0	0	0	0	0
Rockfish	4	5.9	2.5	2.3	0	0	1.8	0	0	1.1
Herring	0	0	0	0	0	0	0	0	0	0
Sculpins	0	3.8	0	0	0	0	0.8	0	0	0
Other Forage Fish	0	0.4	0	0	0	0	8.3	0.7	0	0.5
Other Roundfish	1.7	0.2	0.7	0.3	1	0	0.8	0.1	0	0.1
TOTAL ROUND FISH	51.6	247.8	51	22.4	75.2	20.1	107.2	36.9	17.8	16.2
Arrowtooth Flndr	772.6	69.6	138.3	170.3	37.5	15.5	65	20.4	3.1	9.8
Flathead Sole	147.7	146.9	141.9	240.7	99.5	32.8	292.8	0.4	11.8	12.3
Rock Sole	0	0	0	0	0	0	0	0	0	0
Rex Sole	11.8	21.2	9.5	5	2	0	20.7	0	0.2	0
Dover Sole	0	8.9	3.6	4.2	0	0	1.7	0	0	0
Pac Halibut	0	0	0	11.2	5.1	0	0	2.2	0	4.6
Starry Flndr	0	0	0	0	0	0	0	0	0	0
Yellowfin Sole	0	0	0	0	0	0	0	0	0	0
Other Flatfish	0	7.6	0	0	29.8	11.6	0	0	0	0
TOTAL FLATFISH	932.1	254.1	293.4	431.4	173.9	59.8	380.1	23	15.1	26.7
Pink Shrimp	8.1	28.2	12.2	8.8	1.3	6	34.1	21.5	30.8	44
Humpy Shrimp	0	0	0	0	0	0	0	0	0	0
Coonstripe	0	0	0	0	0	0	0	0	0	0
Sidestripe	0.7	3.5	2.6	0.7	0.5	0.1	0.3	7.1	2.8	1.6
Other Shrimp	0	0.2	1.4	0.8	0	0.1	0.1	0.3	3.1	0.6
TOTAL SHRIMP	8.8	32	16.2	10.3	1.8	6.2	34.4	28.8	36.7	46.2
Euphasiid	0	0	0	0	0	0	0	0	0	0
Other Inverts	0.5	24.7	26.5	1.3	26.4	0.9	0.5	8.8	0.5	0.5
TOTAL INVERTS	0.5	24.7	26.5	1.3	26.4	0.9	0.5	8.8	0.5	0.5
Skates	46.7	1.7	0	0	0	21.8	7.2	0	0	3.8
Spiny Dogfish	4.4	2.5	1.7	1.8	1.6	0	7	7	4.4	8
Other	3.5	145.2	6.3	4.8	0.6	0.3	0.3	0.4	0	0.2
TOTAL CATCH	1047.5	708	395.1	471.9	279.6	109.1	536.7	104.9	74.5	101.6

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Appendix A. (page 2 of 14)

Haul	11	12	13	14	15	16	17	18	19	20
Location	Shelikof	Shelikof	Shelikof	Kukak	Kukak	Kukak	Kukak	Kukak	Kukak	Kukak
Month/Day/Year	10/2/03	10/2/03	10/2/03	10/2/03	10/2/03	10/3/03	10/3/03	10/3/03	10/3/03	10/3/03
Station	200B	173D	199A	833	821	823	822	825	827	829
Longitude Start	153°35.4	153°45.0	153°50.7	154°3.6	154°18.2	154°12.5	154°16.1	154°13.6	154°8.0	154°5.2
Latitude Start	58°15.2	58°17.9	58°16.1	58°20.0	58°17.4	58°18.2	58°18.3	58°19.3	58°19.3	58°19.0
Heading, Degrees	306	265	203	129	56	283	101	76	295	190
Average Depth (m)	175	0	206	69	87	91	89	106	87	74
Distance Fished (km)	1.9	1.9	1.9	1.9	1.9	1.7	1.5	1.9	1.9	1.9
Bottom Temperature	5.4	5.4	5.2	9.5	9.8	9.8	9.8	9.8	9.8	9.4
Performance	1	1	1	1	1	1	1	1	1	1
-----kilograms/kilometer-----										
Pollock	37.9	14.8	19.2	13.3	38.1	44.8	22.7	86.7	45.4	12.6
Pacific Cod	7.9	1.6	0	1.1	7.2	10.5	10.5	6.7	18.4	7.3
Pacific Sandfish	0	0	0	0.2	0	0	0	0	0.1	0
Eulachon	28.7	16.8	43	0.1	0.1	0.8	0.3	0.1	0.8	0.3
Capelin	0	0	0	0	0	0	0	0	0	0
Rockfish	0	0.1	0.2	0	0	0	0	1.1	0.8	0.3
Herring	0	0	0	1.3	3.5	0.1	0.1	0	0.1	0.2
Sculpins	0	0.2	0.1	0	0	0	0	0	0	0
Other Forage Fish	0	1.1	0.2	0	0	0	0	0.2	0.1	0
Other Roundfish	2.7	0.1	0.6	0.1	2.3	2	0.1	3.3	4.3	0.9
TOTAL ROUND FISH	77.3	34.5	63.2	16.1	51.1	58.1	33.6	98.1	69.9	21.5
Arrowtooth Flndr	13	34.9	52.5	0.5	6.4	17.4	2.6	18.9	28.3	3.1
Flathead Sole	8.8	8.3	9.3	4.5	35.4	23	0	26.4	28.3	63.2
Rock Sole	0	0	0	0	0	0	0	0	0	0
Rex Sole	0.6	1.2	0	0.3	0	0.1	0	0	3	1.1
Dover Sole	0	0.3	0	0.2	0.4	0	0	0.3	1.6	0.4
Pac Halibut	0	0.2	0	0.6	8.5	0	0	16	1.2	0.2
Starry Flndr	0	0	0	1	6.3	0	0	0	0	3.6
Yellowfin Sole	0	0	0	0.3	0	0	0	0	2.6	0
Other Flatfish	0	0	0	0	0	0	0	0	2.8	0.3
TOTAL FLATFISH	22.5	45	61.8	7.5	57	40.4	2.6	61.7	67.8	71.8
Pink Shrimp	42.2	15.3	0	0.4	2.1	45.4	0.1	10.6	28.8	2.4
Humpy Shrimp	0	0	0	0	0	0	0	0	0	0
Coonstripe	0	0	0	0	0	0	0	0	0	0
Sidestripe	1.5	4.3	4.2	0	4.8	9.4	0	15.3	25.8	0.1
Other Shrimp	1.3	2.1	1.5	0.1	0.2	0.2	0	0.1	0.2	0.2
TOTAL SHRIMP	45.1	21.7	5.7	0.4	7	54.9	0.1	26	54.8	2.7
Euphasiid	0	0	0	0	0	0	0	0	0	0
Other Inverts	16.5	35.5	39.5	2.3	12.3	8.3	5.1	4.6	2.5	21.2
TOTAL INVERTS	16.5	35.5	39.5	2.3	12.3	8.3	5.1	4.6	2.5	21.2
Skates	0	0.6	0	0	9.9	32.2	9.8	16.5	5.9	0
Spiny Dogfish	2.6	4.2	3.7	0	24	13.3	0	26.3	13.8	0
Other	0.3	0	0.1	0.8	0.6	0.2	0.1	0.1	0.2	0.6
TOTAL CATCH	164.2	141.5	174	27.2	161.9	207.6	51.3	233.2	214.9	117.9

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Haul	21	22	23	24	25	26	27	28	29	30
Location	Shelikof	Shelikof	Shelikof	Shelikof	Shelikof	Shelikof	Shelikof	Uganik	Uganik	Uganik
Month/Day/Year	10/3/03	10/3/03	10/4/03	10/4/03	10/4/03	10/4/03	10/4/03	10/5/03	10/5/03	10/5/03
Station	222D	224A	224C	225C	251D	280B	281D	661	660	650
Longitude Start	154°4.9	153°52.8	153°51.8	153°42.2	153°54.2	153°56.1	153°46.9	153°22.6	153°31.1	153°30.6
Latitude Start	58°8.9	58°9.4	58°9.1	58°8.9	58°4.1	58°1.4	57°58.7	57°43.9	57°40.6	57°46.4
Heading, Degrees	194	35	56	90	232	90	70	351	340	13
Average Depth (m)	281	201	199	197	197	195	219	102	0	164
Distance Fished (km)	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
Bottom Temperature	5.2	5.2	5.2	5.4	5.2	5.2	5.2	7.2	7.9	7.1
Performance	1	1	1	1	1	1	1	1	1	20
-----kilograms/kilometer-----										
Pollock	55.4	19.2	22.9	4.9	34.9	34.3	9.3	79.2	7.5	7.3
Pacific Cod	2.2	0	4.5	3.3	4	0	7.5	5.1	0	2.8
Pacific Sandfish	0	0	0	0	0	0	0	0	0	0
Eulachon	1.1	9.3	12.4	31.9	13.3	37.9	8.3	0.4	0.2	0.4
Capelin	0	0	0	0	0	0	0	0	0	0
Rockfish	0	2.5	0.4	0.5	0.5	0.5	0	0	0	0.5
Herring	0	0	0	0	0	0	0.1	0	0.5	0.2
Sculpins	0	0.1	0.1	0	0	0	0	0	0	0.2
Other Forage Fish	1.1	0	0.1	0	0.2	0	0	0	0.1	6.5
Other Roundfish	4.1	0.5	0	0	4.9	0	4.6	3.4	5.5	5.3
TOTAL ROUNDFISH	64	31.6	40.4	40.7	57.8	72.7	29.9	88.2	13.8	23.2
Arrowtooth Flndr	63	33.3	10.3	8.4	40.1	9.6	34.5	19.4	2.6	259.9
Flathead Sole	8.5	11.6	8.9	18.2	7.8	2.2	0	27.1	84.9	152.3
Rock Sole	0	0	0	0	0	0	0	0	0	0
Rex Sole	0.4	1.1	0.1	0	0.1	0.5	0.6	0	0	0
Dover Sole	0	0	0	0	0	0	4	0	0.3	4.4
Pac Halibut	0	0	0	0	0	0	0	1.4	0.8	27.5
Starry Flndr	0	0	0	0	0	0	0	0	0	0
Yellowfin Sole	0	0	0	0	0	0	0	0.6	27.6	0
Other Flatfish	0	0	0	0	0	0	0	6.7	15.5	0
TOTAL FLATFISH	71.9	46	19.3	26.6	47.9	12.3	39.1	55.3	131.9	444.1
Pink Shrimp	22.9	39	19	48.1	15.7	11	1	1.3	0.1	41
Humpy Shrimp	0	0	0	0	0	0	0	0	0	0
Coonstripe	0	0	0	0	0	0	0	0	0	0
Sidestripe	3.6	8.9	5.6	4.1	4.2	3	2.6	0	0	2
Other Shrimp	0.4	0.8	0.7	3.8	1.1	1.8	0.6	0	0	0.9
TOTAL SHRIMP	26.9	48.7	25.3	56	21	15.8	4.2	1.3	0.1	43.9
Euphasiid	0	0	0	0	0	0	0	0	0	0
Other Inverts	53.9	26.7	68.9	1.9	39.8	86.3	87.3	28.5	18.8	208.8
TOTAL INVERTS	53.9	26.7	68.9	1.9	39.8	86.3	87.3	28.5	18.8	208.8
Skates	0	16.5	1.4	0	0	0	19.4	0	0.3	2.7
Spiny Dogfish	5.6	4.5	9.8	4.1	0	8.2	3.3	0	0	5.1
Other	1.1	0.9	0	0.2	0.8	0.2	0.3	0.4	0.4	46.5
TOTAL CATCH	223.5	174.9	165.1	129.5	167.3	195.4	183.6	173.8	165.2	774.3

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Haul	31	32	33	34	35	36	37	38	39	40
Location	Uganik	Uganik	Uganik	Uganik	Uganik	Uganik	Shelikof	Shelikof	Shelikof	Shelikof
Month/Day/Year	10/5/03	10/5/03	10/5/03	10/6/03	10/6/03	10/6/03	10/6/03	10/6/03	10/6/03	10/7/03
Station	652	654	659	658	655	650	253D	310D	309D	339C
Longitude Start	153°30.4	153°31.8	153°30.0	153°22.7	153°28.8	153°30.6	153°35.5	153°54.5	154°3.5	154°10.7
Latitude Start	57°47.8	57°51.6	57°52.6	57°50.3	57°51.9	57°46.4	58°2.5	57°53.8	57°52.4	57°41.6
Heading, Degrees	340	174	190	299	320	10	340	227	277	34
Average Depth (m)	170	192	173	118	170	164	213	0	199	226
Distance Fished (km)	1.9	1.9	1.3	1.9	1.9	1.9	1.9	1.9	1.9	1.9
Bottom Temperature	7.2	7.2	7.2	7.2	7.2	7.1	5.3	5.3	5.3	5.2
Performance	1	1	1	1	1	1	1	1	1	1
-----kilograms/kilometer-----										
Pollock	54	17.2	107.7	75.7	39.7	18.6	46.3	21.7	31.9	19
Pacific Cod	3.7	0	0	3.4	8.9	0	26.4	2.1	2.6	1.1
Pacific Sandfish	0	0	0	0	0	0	0	0	0	0
Eulachon	0.6	0.9	8.6	0	30.9	1.1	5.9	1.8	2.6	0.4
Capelin	0	0	0	0	0	0	0	0	0	0
Rockfish	0	0.3	24.8	0.9	0	0	0.8	0	0.2	0
Herring	0.2	0.3	0.2	0	0	0	0	0.1	0.1	0
Sculpins	0	0	0.1	0	0.2	1.3	0.2	0	0.1	0.1
Other Forage Fish	1.9	1.5	0.5	0.6	0.6	0.8	0	0	0.1	0
Other Roundfish	0.6	1.4	0.5	0.1	0.1	0.3	2.2	4.4	2.7	0.9
TOTAL ROUNDFISH	61	21.6	142.3	80.6	80.4	22.1	81.7	30.1	40.3	21.5
Arrowtooth Flndr	40.4	7.5	49.5	13.9	13.8	54	30	16.5	19.8	53.3
Flathead Sole	45.7	18	55.7	59.9	28.3	78.1	3.6	1	9.2	0
Rock Sole	0	0	0	0	0	0	0	0	0	0
Rex Sole	0	0	0.1	0	0.3	1.6	3.9	2.5	0.3	0
Dover Sole	0	0	1.5	0	0	0.8	4.5	2.2	0	1.8
Pac Halibut	0	0.5	8.2	0	0	1.6	3.4	0.9	0	0
Starry Flndr	0	0	0	0	0	0	0	0	0	0
Yellowfin Sole	0	0	0	0	0	0	0	0	0	0
Other Flatfish	0	0	0	0	0	0	0	0	0	0
TOTAL FLATFISH	86.2	26	115	73.8	42.4	136	45.4	23.1	29.3	55.1
Pink Shrimp	92.6	54.1	68.2	17.4	59.2	65.4	5.5	42.4	19.8	13.8
Humpy Shrimp	0	0	0	0	0	0	0	0	0	0
Coonstripe	0	0	0	0	0	0	0	0	0	0
Sidestripe	2.9	4	1.9	0.1	3.4	2	7	3.2	5.6	6.2
Other Shrimp	0.2	0.4	0.5	0.1	0.4	0.6	0.1	3.5	0.8	0.5
TOTAL SHRIMP	95.7	58.5	70.6	17.7	63.1	68	12.5	49.1	26.1	20.5
Euphasiid	0	0	0	0	0	0	0	0	0	0
Other Inverts	18	11.8	26.8	19.7	5.3	18.7	0.2	15.9	37	14.3
TOTAL INVERTS	18	11.8	26.8	19.7	5.3	18.7	0.2	15.9	37	14.3
Skates	5.6	6.7	4.5	6.6	4.9	0	24.6	7.1	0	3.2
Spiny Dogfish	15.4	5.5	0	1.2	5.8	2.3	11.1	3.6	14	25.3
Other	1.1	0.4	1.9	0.2	0.2	0.3	0.4	0.8	0.4	0.4
TOTAL CATCH	282.9	130.6	361.2	199.8	202.1	247.4	176	129.6	147	140.4

-Continued-

Appendix A. (page 5 of 14)

Haul	41	42	43	44	45	46	47	48	49	50
Location	Shelikof	Shelikof	Shelikof	Shelikof	Shelikof	Shelikof	Shelikof	Shelikof	Shelikof	Shelikof
Month/Day/Year	10/7/03	10/7/03	10/7/03	10/7/03	10/7/03	10/7/03	10/8/03	10/8/03	10/8/03	10/8/03
Station	338B	366B	365D	365B	337C	337B	308A	279C	279D	279A
Longitude Start	154°12.4	154°13.2	154°30.9	154°33.3	154°29.8	154°24.8	154°19.4	154°10.5	154°5.4	154°10.0
Latitude Start	57°50.9	57°46.3	57°42.4	57°45.2	57°47.2	57°49.9	57°55.0	57°57.5	57°58.3	58°1.5
Heading, Degrees	229	224	317	43	48	53	33	64	44	222
Average Depth (m)	201	210	212	215	215	212	215	206	202	226
Distance Fished (km)	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
Bottom Temperature	5.2	5.3	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2
Performance	1	1	1	1	1	1	1	1	1	1
-----kilograms/kilometer-----										
Pollock	13.5	28.5	22.9	22	60.4	30.8	29.6	20.6	22.2	38.4
Pacific Cod	0	1.9	0	0	0	16.1	2.1	1.2	3.5	1.2
Pacific Sandfish	0	0	0	0	0	0	0	0	0	0
Eulachon	2.5	2	1.5	4.9	1.9	1.3	23.8	5.3	19.9	28.7
Capelin	0	0	0	0	0	0	0	0	0	0
Rockfish	0.1	0.5	0.8	0.8	0	40	0.4	0.2	0.5	1.2
Herring	0	0.2	0	0	0	0	0	0	0	0
Sculpins	0	0	0.1	0.2	0	10.4	0	0.2	0.4	0.2
Other Forage Fish	0	0	0.1	0.3	0.5	0.1	0.1	0	0.6	0.8
Other Roundfish	4.3	1.2	0.9	8.2	0.1	4.9	0	2.1	1.1	4.8
TOTAL ROUNDFISH	20.4	34.3	26.1	36.3	62.8	103.6	56	29.6	48.2	75.3
Arrowtooth Flndr	19.1	23.9	34.2	62.3	46.9	8.3	26.2	10.2	93	46.4
Flathead Sole	7.8	1.1	7.1	3.9	3.5	14.5	5.7	5.3	14.5	2.2
Rock Sole	0	0	0	0	0	0	0	0	0	0
Rex Sole	0.1	0	0.7	1.1	0.6	3.8	0.8	0	0.4	1.6
Dover Sole	0	0	0	0	0	0	0	0	0	4
Pac Halibut	0	4.2	0	0.5	0	0	0.2	0	0	0.2
Starry Flndr	0	0	0	0	0	0	0	0	0	0
Yellowfin Sole	0	0	0	0	0	0	0	0	0	0
Other Flatfish	0	0	0	0	0	0	0	0	0	0
TOTAL FLATFISH	27	29.2	42	67.8	51	26.6	32.9	15.4	107.9	54.3
Pink Shrimp	24.2	17.9	24.4	17.7	24.5	73.2	14.3	18	47	24.1
Humpy Shrimp	0	0	0	0	0	0	0	0	0	0
Coonstripe	0	0	0	0	0	0	0	0	0	0
Sidestripe	6.7	4.2	5.6	10	7.9	7.9	4	7	7.3	7
Other Shrimp	2.4	7.9	2.6	0.5	0.3	0.2	0.3	0.5	0.4	1
TOTAL SHRIMP	33.4	30	32.6	28.2	32.8	81.3	18.6	25.5	54.8	32
Euphasiid	0	0	0	0	0	0	0	0	0	0
Other Inverts	44.9	0.6	17.2	4.2	3.2	34.7	23.1	32	22.4	32.9
TOTAL INVERTS	44.9	0.6	17.2	4.2	3.2	34.7	23.1	32	22.4	32.9
Skates	15.6	0	4.3	1.6	9.1	0	0	0.2	8.4	5.1
Spiny Dogfish	7.6	1.8	8.2	10.8	3.5	12.5	7	1.3	7.9	10.3
Other	0	0.1	1.3	0	0.6	0.5	0.8	1.7	2.1	0.8
TOTAL CATCH	148.9	96	131.6	149	163	259.2	215	105.7	251.6	253.9

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Appendix A.1. (page 6 of 14)

Haul	51	52	53	54	55	56	57	58	59	60
Location	Shelikof	Shelikof	Shelikof	Puale	Puale	Puale	Puale	Wide	Wide	Wide
Month/Day/Year	10/8/03	10/8/03	10/8/03	10/9/03	10/9/03	10/9/03	10/9/03	10/9/03	10/9/03	10/10/03
Station	278A	306A	306D	805	804	803	802	747	745	741
Longitude Start	154°18.1	154°35.6	154°34.1	155°30.1	155°31.1	155°31.6	155°33.6	156°15.9	156°20.1	156°25.2
Latitude Start	58°0.8	57°56.6	57°54.4	57°42.8	57°41.2	57°40.0	57°38.2	57°24.2	57°22.4	57°21.1
Heading, Degrees	240	248	102	222	191	234	337	78	226	63
Average Depth (m)	270	246	256	65	93	89	96	58	64	49
Distance Fished (km)	1.9	1.9	1.9	1.9	1.9	1.9	1.9	0.7	1.9	1.9
Bottom Temperature	5.1	5.2	5.1	9.8	9.8	9.8	9.8	9.6	9.7	9.7
Performance	1	1	1	1	1	1	1	1	1	1
-----kilograms/kilometer-----										
Pollock	22.5	22.6	13.2	5.2	32.6	23.3	109.2	2.3	15.7	75.3
Pacific Cod	0	2.4	0	2.2	7.9	12.3	12.6	0.1	12.9	47.6
Pacific Sandfish	0	0	0	11.6	0.4	0.3	0	0	8.2	92.9
Eulachon	2.2	0.2	8.3	0	0	0.3	0	0	0	0
Capelin	0	0	0	0	0	0	0	0	0.1	0
Rockfish	0	0.5	0	0	0	0	0	0	0.1	0
Herring	0.1	0	0	0.1	0.1	0	0	0	0.2	1.6
Sculpins	0.1	0	0.1	0	0	0	0	5.1	11.8	25.2
Other Forage Fish	0.4	0.8	0.6	0	0	0	0	0	0.2	0
Other Roundfish	5.5	0.2	3.5	1.5	0.2	0.3	2	0.7	3.8	0.6
TOTAL ROUNDFISH	30.7	26.7	25.7	20.7	41.2	36.5	123.8	8.2	52.8	243.2
Arrowtooth Flndr	66.1	29.6	15.2	1.1	3.1	5.8	0	0.1	0	0
Flathead Sole	5	5.4	1.6	42.7	29.2	6.3	21.2	0	11.2	8.5
Rock Sole	0	0	0	0	0	0	0	0	0	0
Rex Sole	0	0.8	0.2	0	0	0	0	0	0	0
Dover Sole	0	0	0	0	0.3	0	0	0	0	0
Pac Halibut	0.8	0.4	3	0	0	0.9	0	2	15.3	0.8
Starry Flndr	0	0	0	19.2	9.3	28.4	19.5	0	0	0
Yellowfin Sole	0	0	0	9.7	0	0	2.1	4	9.1	17.5
Other Flatfish	0	0	0	0	0	0	0	5.1	0	0
TOTAL FLATFISH	71.9	36.2	20	72.6	42	41.4	42.8	11.3	35.6	26.8
Pink Shrimp	12.4	5.3	3.3	12.9	11.7	8.2	15.9	0.3	128.6	463.4
Humpy Shrimp	0	0	0	0.1	0.1	0	0	0.1	8.5	96.5
Coonstripe	0	0	0	0	0	0	0	0	0	0
Sidestripe	3.2	8.8	2.7	0.1	0.4	0	0.1	0	1.2	0
Other Shrimp	1.1	1.5	0.8	0.1	0.2	0	0.1	0	0.3	0.3
TOTAL SHRIMP	16.7	15.7	6.7	13.1	12.4	8.2	16	0.4	138.7	560.3
Euphasiid	0	0	0	0	0	0	0	0	0	0
Other Inverts	31.7	32.5	12.7	0.1	0.1	0.3	0	3.4	0.2	0.4
TOTAL INVERTS	31.7	32.5	12.7	0.1	0.1	0.3	0	3.4	0.2	0.4
Skates	0	0	0.9	5.7	0	0	0	0	0	0
Spiny Dogfish	4.3	0	1.8	0	16.5	0	2.5	0	0	0
Other	0.3	0.1	0.2	0	0.1	0.1	0.8	16.3	1.8	0.9
TOTAL CATCH	155.5	111.1	68.1	112.2	112.3	86.4	185.9	39.7	229	831.5

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Haul	61	62	63	64	65	66	67	68	69	70
Location	Wide	Wide	Wide	Wide	Uyak	Uyak	Uyak	Uyak	Uyak	Uyak
Month/Day/Year	10/10/03	10/10/03	10/10/03	10/10/03	10/11/03	10/11/03	10/11/03	10/11/03	10/11/03	10/11/03
Station	742	740	743	746	612	629	628	610	608	634
Longitude Start	156°23.5	156°21.0	156°20.7	156°20.0	153°55.5	153°48.9	153°50.2	153°53.4	153°52.4	153°47.6
Latitude Start	57°21.4	57°20.4	57°21.2	57°22.3	57°38.7	57°40.6	57°40.4	57°36.1	57°35.3	57°34.0
Heading, Degrees	57	231	350	18	359	233	268	316	313	324
Average Depth (m)	54	40	53	64	177	120	142	144	128	73
Distance Fished (km)	1.9	1.9	1.1	0.9	1.9	1.7	1.9	1.9	1.9	1.9
Bottom Temperature	9.7	9.8	9.6	9.6	7.4	7.7	7.6	7.6	7.7	8.5
Performance	1	1	1	1	1	1	1	1	1	1
-----kilograms/kilometer-----										
Pollock	21.8	19.3	7.8	4.6	26	8	66	17.8	11.6	32.3
Pacific Cod	10.5	5.5	8.1	4.6	6.7	0	1.3	0	0	0
Pacific Sandfish	4.5	87.3	11.2	264.5	0	0	0	0	0	0
Eulachon	0	0	0	0	3.6	6.7	5.2	21.6	20.1	1
Capelin	0	0	0	0	0	0	0	0	0	0
Rockfish	0	0	0	0	0	0	1.4	0.4	1.2	0
Herring	1.6	1.4	1.3	2.3	0	1.5	2.3	0.1	0.1	0.4
Sculpins	0	3.1	0	0	0.1	0	0	0.1	3.6	0
Other Forage Fish	0.3	0.1	0	0	3.2	0	0.5	0.9	0.6	0
Other Roundfish	2.8	3.4	12	0	4	0.9	3.2	0.8	1.9	1
TOTAL ROUNDFISH	41.4	119.9	40.3	276	43.5	17	80	41.6	39.2	34.7
Arrowtooth Flndr	0	0	0	0	166	3.7	13.9	28.9	23.3	5
Flathead Sole	2.2	0.9	1.1	0.8	75.7	41.6	50.2	155.6	121.2	32.2
Rock Sole	0	0	0	0	0	0	0	0	0	0
Rex Sole	0	0	0	0	1.1	0	0	2.3	2	0
Dover Sole	0	0	0	0	1.7	0	0	0	0.3	0
Pac Halibut	0.8	0.4	0	0	2.8	0	0.6	0	0	2
Starry Flndr	0	0	0	0	0	0	0	0	0	25.5
Yellowfin Sole	1.7	4.5	2.5	0	0	0	0	0	0	1.7
Other Flatfish	0	0	0	0	0	0	0	0	0	5.5
TOTAL FLATFISH	4.8	5.8	3.6	0.8	247.2	45.4	64.7	186.8	146.9	71.9
Pink Shrimp	12.4	5.9	0.3	33.9	72.5	36.1	66	108.8	33.7	1.1
Humpy Shrimp	0.8	23.9	0.6	2.5	0	0	0	0	0	0
Coonstripe	0	0.1	0	0.1	0	0	0	0	0	0
Sidestripe	0	0	0	0	3.7	0.4	1.4	3.6	0.2	0
Other Shrimp	0.1	0	0.4	0.1	0.5	0.2	0.3	0.8	0.1	0
TOTAL SHRIMP	13.2	29.8	1.3	36.6	76.7	36.7	67.7	113.2	34	1.1
Euphasiid	0	0	0	0	0	0	0	0	0	0
Other Inverts	5.3	2.2	13	0	1.7	26	26.2	0.9	9.5	10.9
TOTAL INVERTS	5.3	2.2	13	0	1.7	26	26.2	0.9	9.5	10.9
Skates	0	0	0	0	4.3	0	6.8	2.8	7.5	0
Spiny Dogfish	0	0	0	0	11.4	3.2	7.8	4.5	3.6	0
Other	0.1	1.1	1.2	1.9	0.8	0.2	0.5	0.1	0.1	0.3
TOTAL CATCH	64.8	158.7	59.4	315.3	385.6	128.5	253.8	349.8	240.8	118.9

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Haul	71	72	73	74	75	76	77	78	79	80
Location	Uyak	Uyak	Uyak	Uyak	Marmot Is	Marmot Is	Marmot Is	Marmot Is	Marmot Is	Marmot Is
Month/Day/Year	10/11/03	10/12/03	10/12/03	10/12/03	10/13/03	10/13/03	10/13/03	10/13/03	10/13/03	10/13/03
Station	605	632	602	603	4	3	18	26	2	511
Longitude Start	153°54.0	153°49.1	153°54.2	153°54.7	152°3.6	152°3.8	151°56.5	151°50.8	152°1.9	152°9.0
Latitude Start	57°34.0	57°25.7	57°29.1	57°31.2	57°59.0	58°0.9	58°0.8	58°2.7	58°2.9	58°5.0
Heading, Degrees	1	179	336	179	322	55	44	318	299	299
Average Depth (m)	107	73	146	155	177	164	173	151	148	182
Distance Fished (km)	1.7	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
Bottom Temperature	7.7	8.2	7.8	7.8	7.1	7.3	7.1	6.8	7.1	7.2
Performance	1	1	1	1	1	1	1	1	1	1
-----kilograms/kilometer-----										
Pollock	1	20.8	68.5	103.6	34.7	44.2	49.8	29	157.6	47
Pacific Cod	0	0	1.8	2	20.6	35.2	23.2	28.3	238	20.6
Pacific Sandfish	0	0	0	0	0	0	0	0	0	0
Eulachon	1.2	3.9	0.8	2.8	28.2	10.9	0.5	30	23.8	7.2
Capelin	0	0	0	0.1	0	0	0	0	0	0
Rockfish	0.2	0	0.4	2.1	0.7	0	0	0.3	0	2
Herring	0.1	0.3	2.4	0.1	0	0	0	0	0	0
Sculpins	0.1	0	0	0	0	0	0.3	0	0	0
Other Forage Fish	0.1	0	1.7	1.5	0	0	0	0	0	0.2
Other Roundfish	0.1	1.3	2.1	3.9	0.2	0.2	6.4	1.7	0.2	0
TOTAL ROUNDFISH	2.7	26.5	77.6	116	84.3	90.4	80.1	89.4	419.5	77
Arrowtooth Flndr	11	25	26.5	44.4	20	12.3	92	35.9	100.8	25.8
Flathead Sole	11.9	50.2	57.3	35.7	45.2	16.4	20.9	23.9	55	104.6
Rock Sole	0	0	0	0	0	0	0	0	0	0
Rex Sole	0.1	1.5	1.6	3.4	0	0	0.7	0.5	0	0
Dover Sole	0	0	0	0.9	0	0	0	0	0	0
Pac Halibut	0.3	3.5	0.6	0	0	0	0	7	0	0
Starry Flndr	0	2	0	0	0	0	0	0	0	0
Yellowfin Sole	0	0	0	0	0	0	0	0	0	0
Other Flatfish	0	7.9	0	0	0	0	0	0	0	0
TOTAL FLATFISH	23.3	90.1	86	84.4	65.2	28.7	113.6	67.3	155.8	130.3
Pink Shrimp	3.1	1.8	46.4	20.7	56	24.9	62.7	13.2	14.9	134.8
Humpy Shrimp	0	0	0	0	0	0	0	0	0	0
Coonstripe	0	0	0	0	0	0	0	0	0	0
Sidestripe	1	0.1	4.2	8.7	7.3	2.8	3.6	0.9	0.2	4.2
Other Shrimp	0.1	0	0.3	0.3	0.1	0	0.3	0.1	0	0
TOTAL SHRIMP	4.1	1.8	50.9	29.7	63.4	27.6	66.6	14.1	15.1	138.9
Euphasiid	0	0	0	0	0	0	0	0	0	0
Other Inverts	5.1	60.9	0.5	0.8	10.4	0	17.6	0.1	7	1.1
TOTAL INVERTS	5.1	60.9	0.5	0.8	10.4	0	17.6	0.1	7	1.1
Skates	0	0	15.8	23.3	0	11.7	26.2	0	13.3	0.9
Spiny Dogfish	2.2	3.9	7.6	27.5	4.3	40	20.5	0	1.2	3.1
Other	0	0.3	0.3	1.2	0.3	0.3	0.5	0.8	1.3	1.8
TOTAL CATCH	37.4	183.6	238.7	283	227.9	198.7	325.1	171.7	613.2	353.1

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Haul	81	82	83	84	85	86	87	88	89	90
Location	Marmot Is	Marmot Is	Marmot Is	Marmot Is	Marmot	Marmot	Marmot	Marmot	Marmot	Marmot
Month/Day/Year	10/13/03	10/14/03	10/14/03	10/14/03	10/14/03	10/14/03	10/20/03	10/20/03	10/20/03	10/20/03
Station	477	428		426	412	402	415	409	417	418
Longitude Start	152°13.8	152°35.2	152°35.3	152°34.3	152°40.6	152°45.4	152°37.1	152°39.7	152°36.2	152°37.2
Latitude Start	58°6.8	58°8.5	58°7.2	57°57.3	57°55.7	57°52.7	57°57.2	57°58.0	58°0.0	57°59.0
Heading, Degrees	221	196	172	32	182	20	266	29	35	25
Average Depth (m)	0	100	0	146	0	109	131	128	149	133
Distance Fished (km)	1.9	1.9	1.3	1.7	1.9	1.3	1.7	1.7	1.9	1.9
Bottom Temperature	7.3	8.1	8.2	7.3	7.6	7.5	7.3	7.4	7.3	7.3
Performance	1	1	1	1	1	1	1	1	1	1
-----kilograms/kilometer-----										
Pollock	70.6	9.9	203.3	20.5	0.4	11	9.1	20.3	4.1	19.7
Pacific Cod	18.1	0	2.9	0	0.2	4	3.9	3.2	3.1	10.6
Pacific Sandfish	0	0	0	0	0	0	0	0	0	0
Eulachon	38.1	0	0	7.4	0	0	8.9	0.6	47.3	12.9
Capelin	0	0	0	0	0	0	0	0	0	0
Rockfish	0	0	0	1.9	0	0	0	0	0	0.3
Herring	0	6.1	13.6	0	0	0	0	0	0	0
Sculpins	0	0.1	0	0	0	0.5	0	0.8	0	0.1
Other Forage Fish	0	2.5	0.6	0	0.2	0	0	0	0	0
Other Roundfish	0	0.3	4.6	0	0	0.7	0	0	0	0
TOTAL ROUNDFISH	126.8	18.8	224.9	29.8	0.8	16.2	21.9	25	54.5	43.6
Arrowtooth Flndr	2.7	1.6	0	30.9	11.8	15.2	13.1	9.4	8.5	20.4
Flathead Sole	26.5	60.9	96	56.2	15.7	4.6	44.5	12.7	31.6	44.5
Rock Sole	0	0	0	0	0	0	0	0	0	0
Rex Sole	1.8	0	0	2.3	0	0	1.8	3.2	0	2.8
Dover Sole	0	0	0	2.7	0	0.7	0	1	0	0
Pac Halibut	0	0	0	0	1	0	0	0	1.4	2.8
Starry Flndr	0	0	0	0	9.4	0	0	0	0	0
Yellowfin Sole	0	0	0	0	0	0	0	0	0	0
Other Flatfish	0	0	0	0	7.2	0	0	0	0	0
TOTAL FLATFISH	31	62.5	96	92.1	45.1	20.5	59.5	26.3	41.5	70.4
Pink Shrimp	74.7	3.9	10.7	52.1	0.7	0.7	28.4	4.7	49.7	0
Humpy Shrimp	0	0	0	0	0	0	0	0	0	0
Coonstripe	0	0	0	0	0	0	0	0	0	0
Sidestripe	0	0.3	0.5	0.9	0	0	0.1	0	1.5	0
Other Shrimp	0	0	0	0.1	0.1	0.2	0.1	0.1	0.1	0
TOTAL SHRIMP	74.7	4.2	11.2	53.1	0.8	0.9	28.6	4.8	51.3	0
Euphasiid	0	0	0	0	0	0	0	0	0	0
Other Inverts	9.8	16.8	13.2	16.6	30.3	40.8	0.2	8.5	3.5	17.7
TOTAL INVERTS	9.8	16.8	13.2	16.6	30.3	40.8	0.2	8.5	3.5	17.7
Skates	0	0	0	0	0	0	0	0	6.1	0
Spiny Dogfish	11.2	0	0	2.6	2.2	0	0	2.9	4.9	2.9
Other	0.3	0.3	0.3	0.1	1.9	14	0.2	3.3	1.2	0.4
TOTAL CATCH	253.8	102.6	345.6	194.3	81	92.5	110.3	70.7	162.9	135

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Appendix A. (page 10 of 14)

Haul	91	92	93	94	95	96	97	98	99	100
Location	Marmot	Marmot	Marmot	Marmot	Marmot	Ugak	Ugak	Ugak	Kiliuda	Kiliuda
Month/Day/Year	10/20/03	10/20/03	10/21/03	10/21/03	10/21/03	10/22/03	10/22/03	10/22/03	10/22/03	10/22/03
Station	441	470	492	495	497	113	117	123	162	157
Longitude Start	152°31.0	152°16.4	152°14.4	152°12.9	152°13.0	152°43.9	152°40.8	152°33.8	152°51.0	152°55.6
Latitude Start	57°59.4	58°5.9	58°10.6	58°8.4	58°7.1	57°27.7	57°25.9	57°22.9	57°14.3	57°16.9
Heading, Degrees	28	221	303	321	91	144	134	148	301	344
Average Depth (m)	168	168	155	168	179	89	0	100	118	91
Distance Fished (km)	1.3	1.9	1.3	1.5	1.9	1.9	1.9	1.9	1.9	1.9
Bottom Temperature	7.3	7.2	7.1	7	7	8.8	7.9	8	8.5	8.3
Performance	1	1	1	1	1	1	1	1	1	1
-----kilograms/kilometer-----										
Pollock	79.2	64.1	31.6	15.9	20.4	40.2	280.8	32.6	4.6	116.8
Pacific Cod	8.6	33.9	18.4	3.9	2.5	10.9	14.7	1.8	0	15.2
Pacific Sandfish	0	0	0	0	0	0	0	0	0.1	0.3
Eulachon	4.5	35.6	11.3	32.5	11.6	3.3	35.5	2.3	0	47.8
Capelin	0	0	0	0	0	0	0	0	0	0
Rockfish	0	0	0.5	0	0	0	0	0	0	0
Herring	0	0	0	0	0	0.2	0	0	0	0
Sculpins	0.2	0	7.1	0	0	0.2	0	0	0	0
Other Forage Fish	0.8	0.4	0	0	0	0	0	0	0	0
Other Roundfish	0.2	0.1	0.2	1.8	2.3	5.1	0.6	2.9	0.1	0
TOTAL ROUND FISH	93.4	134.2	69.1	54.1	36.8	59.9	331.6	39.6	4.8	180.1
Arrowtooth Flndr	28.2	28.6	138.2	17.8	15.9	4.3	0.2	0.2	5.7	3.8
Flathead Sole	95.6	56.4	29.6	75.7	57.5	48.5	7.9	9	4.9	3.5
Rock Sole	0	0	0	0	0	0	0	0	0	0
Rex Sole	4.9	1.6	2	1.3	1.9	0	0	0	0	0
Dover Sole	0	9.6	0	0	2.9	0	0	0.2	0	0
Pac Halibut	0	0	0	0	1.8	0	7.4	0	0	3.2
Starry Flndr	0	0	0	0	0	0	0	0	0	0
Yellowfin Sole	0	0	0	0	0	5.2	0	0	0	0
Other Flatfish	0	0	0	0	0	0	0	0	0	0
TOTAL FLATFISH	128.7	96.2	169.9	94.7	80	58	15.5	9.3	10.6	10.5
Pink Shrimp	196	95.7	37.8	47.7	32.2	0.8	1.1	0.1	0.2	0.9
Humpy Shrimp	0	0	0	0	0	0	0	0	0	0
Coonstripe	0	0	0	0	0	0	0	0	0	0
Sidestripe	1.7	0.1	4	5.7	0.9	0	0	0	0	0
Other Shrimp	0.4	0.2	0.8	0.1	0.1	0	0	0	0	0
TOTAL SHRIMP	198.1	96	42.7	53.5	33.1	0.8	1.1	0.1	0.2	0.9
Euphasiid	0	0	0	0	0	0	0	0	0	0
Other Inverts	6.2	0.2	10.1	5.9	3.2	21.4	28.7	2.5	1.8	1.9
TOTAL INVERTS	6.2	0.2	10.1	5.9	3.2	21.4	28.7	2.5	1.8	1.9
Skates	0	0	0	0	0	4.5	0	0	0	0
Spiny Dogfish	5	7.2	36.9	19.6	3.6	1.1	3.1	1.3	1.4	3.9
Other	0.8	0	4.7	0.3	0	0.1	0.2	0.1	0.3	0.2
TOTAL CATCH	432.2	333.7	333.3	228.1	156.7	145.7	380.2	53	19.1	197.6

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Appendix A. (page 11 of 14)

Haul	101	102	103	104	105	106	107	108	109	110
Location	Kiliuda	Kiliuda	Kiliuda	Kiliuda	Kiliuda	Twoheaded	Twoheaded	Twoheaded	Twoheaded	Twoheaded
Month/Day/Year	10/22/03	10/23/03	10/23/03	10/23/03	10/23/03	10/23/03	10/23/03	10/24/03	10/24/03	10/24/03
Station	159	144	148	151	166	235	226	203	205	210
Longitude Start	152°59.1	153°4.3	153°0.1	152°58.0	152°47.0	153°24.1	153°26.0	153°21.3	153°22.9	153°25.6
Latitude Start	57°18.6	57°11.8	57°12.1	57°13.3	57°13.6	56°55.2	56°57.0	57°9.2	57°7.8	57°4.8
Heading, Degrees	23	78	73	48	116	266	10	222	220	196
Average Depth (m)	80	122	120	115	131	131	124	118	122	118
Distance Fished (km)	1.3	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
Bottom Temperature	8.5	6.7	6.7	7.6	8.7	7.1	7.3	7.7	7.7	7.7
Performance	1	1	1	1	1	1	1	1	1	1
-----kilograms/kilometer-----										
Pollock	61	118.6	53.1	82.2	34	174.1	573.6	30.9	764.1	1058.8
Pacific Cod	2.1	13.8	6.9	15	28.9	7.4	6.5	2.1	0	9.5
Pacific Sandfish	1.3	0	0	0	0	0.1	0	0	0	0
Eulachon	5.5	6.9	51.9	6.4	0.3	0	0	87.6	1.1	0.2
Capelin	0	0	0	0	0	0	0	0	0	0
Rockfish	0	1.5	0	0	1.9	0	0	0	0.8	0
Herring	0.8	0	0	0	0	0	0	0	0	0
Sculpins	0	0	0	0	6.7	0	0	0	0.3	0
Other Forage Fish	0	0	0	0	0	0	0	0	0	0
Other Roundfish	0.1	0	0.1	0	0	0.3	0.3	7.2	0	0
TOTAL ROUND FISH	70.8	140.7	112	103.6	71.9	181.9	580.5	127.9	766.3	1068.5
Arrowtooth Flndr	6.4	23.2	0	7.7	26.4	5.1	4	32.2	47	1
Flathead Sole	16.4	16.4	23.5	59	45.5	8.4	21.3	21.1	54	15.2
Rock Sole	0	0	0	0	0	0	0	0	0	0
Rex Sole	0	0.4	0	2.1	9.5	0	0.8	0	4.5	0
Dover Sole	0	0	0	0	5.1	0	1.8	0	5.5	0
Pac Halibut	0	0	0	40.2	4	0	0	0	0	0
Starry Flndr	0	0	0	0	0	0	0	0	0	0
Yellowfin Sole	2	0	0	0	0	0	0	0	0	0
Other Flatfish	0	0	0	0	3.9	0	0	1	2	0
TOTAL FLATFISH	24.8	40	23.5	109	94.4	13.5	27.9	54.3	113	16.2
Pink Shrimp	0.3	27.2	41.8	28.1	1.7	0.8	0	0.9	0.2	0.2
Humpy Shrimp	0	0	0	0	0	0	0	0	0	0
Coonstripe	0	0	0	0	0	0	0	0	0	0
Sidestripe	0	0.1	0	0	0	0	0	0	0	0
Other Shrimp	0	0.3	0	0	0	0	0	0	0	0
TOTAL SHRIMP	0.3	27.5	41.8	28.1	1.7	0.8	0	0.9	0.2	0.2
Euphasiid	0	0	0	0	0	0	0	0	0	0
Other Inverts	9.1	45.1	48.4	35.6	1.2	1.1	0.8	108.4	21.8	17.6
TOTAL INVERTS	9.1	45.1	48.4	35.6	1.2	1.1	0.8	108.4	21.8	17.6
Skates	32.2	0	0	0	0	0	0	0	0	0
Spiny Dogfish	0	0	0	0	3.7	0	2.1	0	11.1	0
Other	0.1	2.6	0.1	0.2	2.2	0.3	0	0.2	0.3	0
TOTAL CATCH	137.2	255.9	225.8	276.5	175.1	197.6	611.2	291.6	912.6	1102.5

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Haul	111	112	113	114	115	116	117	118	119	120
Location	Twoheaded	Twoheaded	Twoheaded	Twoheaded	Alitak Flat	Alitak Flat	Alitak Flat	Alitak Flat	Alitak Flat	Alitak Flat
Month/Day/Year	10/24/03	10/24/03	10/24/03	10/24/03	10/25/03	10/25/03	10/25/03	10/25/03	10/25/03	10/25/03
Station	216	218	221	230	352	394	370	391	407	389
Longitude Start	153°26.3	153°28.9	153°28.8	153°29.9	154°16.9	154°21.2	154°22.2	154°25.7	154°28.7	154°28.8
Latitude Start	57°1.8	57°0.9	56°59.9	56°56.9	56°45.2	56°44.4	56°46.7	56°47.1	56°45.8	56°47.6
Heading, Degrees	185	183	183	185	106	272	0	213	266	17
Average Depth (m)	120	118	128	131	47	71	58	58	73	60
Distance Fished (km)	1.1	1.1	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
Bottom Temperature	7.8	8	7.3	7	9.4	9.4	9.2	9.4	9.3	9.3
Performance	1	1	1	1	1	1	1	1	1	1
-----kilograms/kilometer-----										
Pollock	1164.8	25.6	614.7	812.7	10.9	3.3	7.1	7	22	5.2
Pacific Cod	0	0	0	1.9	2.1	0	1.2	0	0	0
Pacific Sandfish	0	0.3	0	0	29.2	1.7	12.8	2.5	0.8	4.2
Eulachon	0.4	1.6	0	0.8	0	0.2	0	0	0	0
Capelin	0	0.1	0.1	0	0	0	0	0	0	0
Rockfish	0	0	0	0.2	0	0	0	0	0	0
Herring	0.3	0	0	0	3.9	0.5	0.5	1	1.2	5
Sculpins	0	0	0	0	0	0	0	0	0	0
Other Forage Fish	0	0	0	0	0	0	0	0	0.1	0
Other Roundfish	0	0.4	0	0	8.5	3.1	3.9	3.3	2.3	3.2
TOTAL ROUNDFISH	1165.5	28	614.8	815.6	54.5	8.7	25.5	13.9	26.3	17.6
Arrowtooth Flndr	0.9	0.9	28.1	41.4	0	0	0	0	0	0
Flathead Sole	8.7	19.5	23.5	45.8	0	2.8	0.2	0.9	1.8	1.2
Rock Sole	0	0	0	0	0	0	0	0	0	0
Rex Sole	0	0.1	0	5.1	0	0	0	0	0	0
Dover Sole	0	0	0	0	0	0	0	0	0	0
Pac Halibut	0	0	0.3	0	0	0	0.9	0	0	0
Starry Flndr	0	0	0	0	0	0	0	0	0	0
Yellowfin Sole	0	0	0	0	0	0	0	0	0	0
Other Flatfish	0	2	0	5	0	0	0	0	0	0
TOTAL FLATFISH	9.6	22.5	51.9	97.3	0	2.8	1.1	0.9	1.8	1.2
Pink Shrimp	0	0.2	0	0.5	0	0.1	0.2	0	0	0
Humpy Shrimp	0	0	0	0	0	0	0	0	0	0
Coonstripe	0	0	0	0	0	0	0	0	0	0
Sidestripe	0	0	0	0	0	0	0	0	0	0
Other Shrimp	0	0	0	0	0	0.1	0.1	0	0	0
TOTAL SHRIMP	0	0.2	0	0.5	0	0.1	0.3	0	0	0
Euphasiid	0	0	0	0	0	0	0	0	0	0
Other Inverts	5.3	25.7	3.2	23	6.9	12.7	29.8	7.5	1.7	4.5
TOTAL INVERTS	5.3	25.7	3.2	23	6.9	12.7	29.8	7.5	1.7	4.5
Skates	0	0	0	0	0	0	0	0	0	0
Spiny Dogfish	0	4.2	1.6	0	0	6.8	1.3	2.1	6.4	4.8
Other	0.4	0.4	0.2	0	0.1	0	0.1	0	0	0
TOTAL CATCH	1180.8	81	671.8	936.3	61.5	31.1	58.1	24.3	36.3	28.1

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Haul	121	122	123	124	125	126	127	128	129	130
Location	Alitak Flat	Alitak Flat	Alitak Flat	Alitak	Alitak	Alitak	Alitak	Alitak	Alitak	Alitak
Month/Day/Year	10/25/03	10/25/03	10/25/03	10/26/03	10/26/03	10/26/03	10/26/03	10/26/03	10/26/03	10/26/03
Station	366	360	334	281	287	291	293	299	303	306
Longitude Start	154°27.9	154°26.7	154°20.1	153°48.3	153°57.5	153°59.4	154°4.7	153°59.8	154°2.7	154°4.9
Latitude Start	56°49.5	56°50.9	56°50.3	57°7.7	57°2.2	56°59.2	56°54.8	56°54.5	56°52.7	56°51.2
Heading, Degrees	24	95	160	213	204	233	20	220	263	255
Average Depth (m)	69	65	43	107	155	124	87	60	58	62
Distance Fished (km)	1.9	1.9	1.9	1.9	1.3	1.5	1.9	1.9	1.9	1.9
Bottom Temperature	9.6	9.7	9.2	5.4	4.9	5.2	7.4	9.1	9	9.1
Performance	1	1	1	1	1	1	1	1	1	1
-----kilograms/kilometer-----										
Pollock	8.5	7.3	13.6	72.2	107.1	48.5	24.1	13	3.7	2.2
Pacific Cod	4.6	2.4	13.8	0	1.6	0	2.4	0	0	0
Pacific Sandfish	6.9	19.6	3.6	0	0	0	0.1	0.8	0.3	0.8
Eulachon	0.4	0.1	0	0	0	0	0.7	0	0	0
Capelin	0.1	0.3	0.1	0	0	0	0.1	0	0	0
Rockfish	0	0	0	0	0	0	0	0	0	0
Herring	1.1	0.5	0.7	0.2	0	0	0.6	1.2	0.6	0.8
Sculpins	0	0	0	0	1.2	0	0	0	0	0
Other Forage Fish	0	0	0	0	26.8	2.2	0	0.1	0	0
Other Roundfish	1.4	0.9	20.5	2.1	4.1	0	0	9.9	4.5	1.1
TOTAL ROUNDFISH	22.9	31.1	52.3	74.5	140.8	50.8	28	25	9.2	4.9
Arrowtooth Flndr	0	0	0	7.1	12.8	26.3	8.3	0	0	0
Flathead Sole	0	0	0	30.7	33.9	18.8	13.3	0.6	0	0.1
Rock Sole	0	0	0	0	0	0	0	0	0	0
Rex Sole	0	0	0	0	0.2	0	0	0	0	0
Dover Sole	0	0	0	0	0	0	0	0	0	0
Pac Halibut	0	0	0	0	12.3	0.8	1	0	0	0
Starry Flndr	0	0	0	0	0	0	0	0	0	0
Yellowfin Sole	0	0	0	1.5	0	0	0.4	0	0	0
Other Flatfish	0	0	0	0	4.2	0	0	0	0	0
TOTAL FLATFISH	0	0	0	39.3	63.3	45.9	23	0.6	0	0.1
Pink Shrimp	6.6	3	0.1	8.5	16.4	35.4	1.1	0	0	0
Humpy Shrimp	0	0	0	0	0	0	0	0	0	0
Coonstripe	0	0	0	0	0	0	0	0	0	0
Sidestripe	0	0	0	0	23.4	8.2	0	0	0	0
Other Shrimp	0.1	0.1	0.2	0.4	2.2	2.3	0.1	0	0	0
TOTAL SHRIMP	6.6	3.1	0.2	8.9	42	45.9	1.2	0	0	0
Euphasiid	0	0	0	0	0	0	0	0	0	0
Other Inverts	3.8	2.1	18.7	3.3	18.3	9.9	20.1	10.9	10.3	8.3
TOTAL INVERTS	3.8	2.1	18.7	3.3	18.3	9.9	20.1	10.9	10.3	8.3
Skates	0	0	0	0	0	0	0	0	0	0
Spiny Dogfish	0	1.2	0	0	2.2	0	0	0	0	0
Other	0	0.2	0.2	1.5	0.5	0.1	0.1	0.2	0	0
TOTAL CATCH	33.4	37.7	71.3	127.4	267.1	152.5	72.4	36.7	19.5	13.2

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Haul	131	132	133	134	135	136	137	138
Location	Alitak	Alitak	Alitak	Alitak	Alitak	Ugak	Ugak	Ugak
Month/Day/Year	10/26/03	10/27/03	10/27/03	10/27/03	10/27/03	10/28/03	10/28/03	10/28/03
Station	314	311	318	326	328	138	132	130
Longitude Start	154°8.5	154°9.0	154°11.2	154°13.9	154°10.6	152°31.7	152°30.0	152°28.7
Latitude Start	56°50.3	56°51.5	56°50.0	56°48.2	56°47.1	57°17.0	57°19.0	57°20.3
Heading, Degrees	259	265	266	108	150	47	347	331
Average Depth (m)	43	45	40	31	45	102	96	89
Distance Fished (km)	1.9	1.9	1.9	1.3	1.7	1.9	1.9	1.9
Bottom Temperature	9	9	9	9.1	8.9	7.5	8.2	8.6
Performance	1	1	1	1	1	1	1	1
-----kilograms/kilometer-----								
Pollock	1.7	5.5	0.7	0	0.8	37.4	143.6	315.4
Pacific Cod	0.9	2.5	0	0	0	0	7.1	7
Pacific Sandfish	0.5	11.3	0.2	0	0	0.2	0	0.2
Eulachon	0	0	0	0	0	2.6	6.7	3.7
Capelin	0	0	0	0	0	0.1	0	0.1
Rockfish	0	0	0	0	0	0	0	0
Herring	1.8	4.6	0.4	2.1	0.9	0	0	0.3
Sculpins	0	0	0	0	0	0	0	0
Other Forage Fish	0	0	0	0	0	0	0	0
Other Roundfish	6.5	14.3	2.5	0.2	2	0	0.5	3
TOTAL ROUNDFISH	11.4	38.2	3.8	2.2	3.7	40.3	157.9	329.6
Arrowtooth Flndr	0	0	0	0	0	0	0	0.1
Flathead Sole	0	0.6	0	0	0	0	0.6	1.2
Rock Sole	0	0	0	0	0	0	0	0
Rex Sole	0	0	0	0	0	0	0	0
Dover Sole	0	0	0	0	0	0	0	0
Pac Halibut	0	0	0	0	0	0	0	0
Starry Flndr	0	0	1	8.8	1.2	0	0	0
Yellowfin Sole	0.2	0	0	0	0	0	0	0
Other Flatfish	0	0	0	0	0	0	1.8	0
TOTAL FLATFISH	0.2	0.6	1	8.8	1.2	0	2.4	1.3
Pink Shrimp	0	0	0	0	0	0.1	0.2	0.1
Humpy Shrimp	0	0	0	0	0	0	0	0
Coonstripe	0	0	0	0	0	0	0	0
Sidestripe	0	0	0	0	0	0	0	0
Other Shrimp	0	0	0.1	0.1	0.1	0	0	0
TOTAL SHRIMP	0	0	0.1	0.1	0.1	0.1	0.2	0.1
Euphasiid	0	0	0	0	0	0	0	0
Other Inverts	5.3	48.7	21	9.7	1.7	8.2	24.8	5.7
TOTAL INVERTS	5.3	48.7	21	9.7	1.7	8.2	24.8	5.7
Skates	0	0	0	0	0	0	0	0
Spiny Dogfish	1.5	0	0	0	2	0	1.6	6.8
Other	0	0.1	0.1	0	0	1.2	0	0
TOTAL CATCH	18.5	87.5	26	20.8	8.6	49.8	186.9	343.5

Appendix B.1. Walleye pollock lengths from the 2003 Westward Region small-mesh trawl survey.

length (cm)	Marmot Bay	Marmot Island	Chiniak Bay	Ugak Bay	Kiliuda Bay	Alitak Bay	Uyak Bay	Uganik Bay	Kukak Bay	Wide Bay	Puale Bay	Shelikof Strait	Alitak Flats
7	0	0	0	0	0	2	0	0	2	0	0	0	0
8	0	0	0	0	0	2	3	1	12	7	1	0	3
9	3	9	0	0	0	33	56	17	97	54	18	0	50
10	33	37	3	2	1	108	212	43	132	144	52	0	183
11	83	74	7	7	20	135	186	69	97	135	46	0	188
12	141	73	7	22	73	73	46	24	28	51	24	0	63
13	100	36	4	33	65	33	3	2	7	17	7	0	11
14	25	7	3	33	19	3	1	0	1	3	2	0	6
15	2	1	1	29	6	5	0	0	0	2	1	0	1
16	0	1	0	12	2	3	0	0	1	0	1	0	0
17	0	0	0	2	0	0	0	0	1	1	0	0	0
18	0	0	0	2	0	1	0	0	4	0	1	0	0
19	0	0	0	0	0	1	0	0	25	3	5	0	0
20	0	0	0	0	2	7	0	0	18	2	25	0	0
21	2	1	0	1	4	2	0	0	33	4	28	0	0
22	0	5	1	0	9	7	3	0	28	8	33	0	0
23	6	4	1	3	14	10	0	3	13	9	15	0	0
24	3	4	0	5	7	18	4	3	9	8	15	0	0
25	9	4	0	5	6	13	2	1	9	4	11	0	1
26	7	6	1	9	3	13	1	0	8	2	1	0	1
27	0	5	0	5	2	9	0	1	9	1	2	0	1
28	0	1	0	6	0	6	0	0	16	0	1	0	1
29	0	2	2	3	0	3	0	0	23	0	0	0	0
30	0	0	0	8	0	4	0	2	25	0	1	0	0
31	0	0	0	3	1	3	2	3	14	0	0	0	0
32	2	0	0	5	0	7	3	0	18	0	2	0	0
33	4	0	0	5	0	2	7	0	22	0	0	0	0
34	3	1	0	4	1	6	6	0	11	0	0	0	1
35	16	0	2	5	2	11	5	2	9	0	0	0	1
36	7	3	4	7	2	3	12	0	7	0	0	0	2
37	9	5	12	12	2	7	11	4	13	0	0	0	2
38	18	5	14	9	1	4	9	6	10	0	0	0	6
39	13	9	17	16	4	7	8	7	8	0	0	0	8
40	12	7	16	15	2	0	8	3	11	0	0	0	8
41	20	13	21	13	1	3	13	11	12	0	0	0	3
42	8	12	12	18	2	3	15	7	10	0	0	0	7
43	12	15	10	16	4	4	10	14	11	0	0	0	7
44	6	17	12	17	8	3	10	9	7	0	0	0	6
45	4	17	2	12	3	3	9	14	7	0	0	0	6
46	2	5	7	12	8	3	6	9	11	0	0	0	2
47	3	6	7	13	11	2	8	9	1	0	0	0	4

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Appendix B.1. (page 2 of 2)

length (cm)	Marmot Bay	Marmot Island	Chiniak Bay	Ugak Bay	Kiliuda Bay	Alitak Bay	Uyak Bay	Uganik Bay	Kukak Bay	Wide Bay	Puale Bay	Sheikof Strait	Alitak Flats
48	2	5	3	11	6	2	8	18	3	0	0	0	3
49	2	1	2	4	8	3	5	13	6	0	1	0	2
50	1	3	2	10	7	1	3	12	4	0	1	0	1
51	5	1	2	7	4	3	4	8	2	0	0	0	1
52	0	2	0	3	4	1	1	11	1	0	0	0	0
53	2	0	2	1	1	3	3	6	1	0	1	0	0
54	1	3	1	5	4	2	5	4	0	0	0	0	0
55	1	3	1	5	4	2	3	4	2	1	0	0	0
56	0	1	0	3	4	3	7	4	0	0	0	0	0
57	3	2	2	1	3	1	1	10	2	1	1	0	1
58	1	6	4	5	5	2	3	4	0	0	0	0	0
59	1	1	1	0	3	4	0	3	1	0	1	0	0
60	1	1	3	2	2	0	1	4	0	0	0	0	0
61	0	2	1	2	2	2	3	1	0	0	0	0	0
62	3	3	1	1	6	0	0	5	0	0	0	0	0
63	1	2	3	1	2	1	1	4	1	0	1	0	0
64	3	0	2	1	5	3	0	0	0	0	0	0	0
65	0	3	0	1	1	3	0	3	0	0	0	0	0
66	0	6	0	2	2	1	0	0	1	0	0	0	0
67	0	2	1	0	7	0	0	0	0	0	0	0	0
68	1	1	1	0	0	0	0	0	0	0	0	0	0
69	1	3	1	0	1	0	0	1	0	0	0	0	0
70	1	1	0	0	0	1	0	0	0	0	0	0	0
71	1	1	0	0	1	0	0	2	0	0	0	0	0
72	3	0	1	0	1	0	0	0	0	0	0	0	0
73	0	1	0	0	0	0	0	0	0	0	0	0	0
74	0	0	0	0	2	0	0	0	0	0	0	0	0
75	0	0	0	0	1	1	0	0	0	0	0	0	0
76	0	0	1	0	0	0	0	1	0	0	0	0	0

Appendix B.2. Flathead sole lengths from the 2003 Westward Region small-mesh trawl survey.

length (cm)	Marmot Bay	Marmot Island	Chiniak Bay	Ugak Bay	Kiliuda Bay	Alitak Bay	Uyak Bay	Uganik Bay	Kukak Bay	Wide Bay	Puale Bay	Shelikof Strait	Alitak Flats
5	0	0	0	0	0	1	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0	0	0	0	0	0	3
7	0	1	0	0	0	0	0	0	0	0	0	0	0
8	3	0	1	0	1	1	9	3	2	2	0	0	0
9	3	18	0	0	2	2	9	28	18	3	0	0	0
10	9	20	6	1	2	0	8	9	10	3	1	0	0
11	9	13	4	3	0	0	3	1	4	8	1	0	0
12	1	8	4	1	0	0	3	1	6	1	3	0	0
13	4	7	6	2	3	0	2	7	7	1	1	0	2
14	6	6	4	1	2	0	3	2	7	1	2	0	0
15	12	7	9	1	0	1	2	1	7	4	0	0	0
16	4	7	2	0	0	1	4	1	4	6	0	0	0
17	5	3	3	1	2	0	7	1	5	5	2	0	2
18	0	0	4	3	0	3	3	3	12	2	1	0	1
19	3	1	8	2	3	0	9	9	10	7	2	0	2
20	2	5	0	4	2	0	11	2	17	8	2	0	1
21	10	5	5	2	1	2	8	6	11	6	4	0	0
22	8	4	2	1	0	2	11	4	20	4	1	0	0
23	10	7	9	2	2	5	10	8	24	5	0	0	0
24	13	10	8	3	1	6	16	17	20	11	6	0	2
25	20	7	16	5	5	10	16	17	11	4	2	0	1
26	25	7	21	5	6	14	24	16	21	3	5	0	2
27	30	18	16	8	5	18	20	8	19	4	7	0	2
28	23	15	23	1	8	20	19	14	17	2	14	0	2
29	21	6	24	2	4	24	31	26	9	0	14	0	1
30	24	14	25	2	3	20	23	21	16	0	11	0	1
31	21	14	11	2	7	18	33	35	13	0	19	0	2
32	20	13	14	3	2	7	20	28	17	0	10	0	5
33	25	15	20	4	3	13	16	38	15	0	6	0	2
34	23	17	18	1	12	10	22	42	20	0	8	0	0
35	20	25	16	3	9	8	21	40	15	0	5	0	2
36	22	23	12	4	12	3	20	32	5	0	5	0	2
37	21	20	24	6	9	3	13	28	10	0	2	0	2
38	16	27	11	0	16	5	9	16	9	0	6	0	1
39	15	22	8	1	13	5	7	17	5	0	2	0	1
40	8	12	3	4	15	1	6	6	4	0	1	0	0
41	9	15	8	4	8	1	1	10	3	0	7	0	1
42	5	11	4	3	14	0	3	7	3	0	2	0	0
43	5	8	5	1	14	0	0	5	2	0	5	0	1
44	3	4	3	3	6	1	0	2	4	0	2	0	0
45	5	7	3	0	3	0	1	0	1	0	3	0	0
46	0	5	3	0	2	0	0	0	1	0	1	0	0
47	1	4	1	0	0	0	0	0	0	0	2	0	0
48	0	1	0	0	0	0	0	0	0	0	0	0	0
49	0	0	0	1	0	0	0	0	0	0	0	0	0
51	0	0	0	0	0	0	0	1	0	0	0	0	0

Appendix B.3. Arrowtooth flounder lengths from the 2003 Westward Region small-mesh trawl survey.

length (cm)	Marmot Bay	Marmot Island	Chiniak Bay	Ugak Bay	Kiliuda Bay	Alitak Bay	Uyak Bay	Uganik Bay	Kukak Bay	Wide Bay	Puale Bay	Shellikof Strait	Alitak Flats
8	0	0	0	0	1	0	0	0	0	0	0	0	0
9	0	0	0	0	1	0	0	0	0	0	0	0	0
10	0	0	0	0	1	0	0	0	0	0	0	0	0
11	0	0	0	4	1	0	0	0	1	0	0	0	0
15	1	1	0	0	0	0	0	0	0	0	0	0	0
16	6	4	3	0	0	0	1	0	3	0	0	0	0
17	10	2	1	0	0	0	0	1	4	0	0	0	0
18	5	4	8	0	1	0	1	0	2	1	0	0	0
19	9	5	1	0	0	0	0	0	1	0	0	0	0
20	8	3	7	0	2	1	2	0	0	0	0	0	0
21	5	4	6	0	0	0	4	0	2	0	0	0	0
22	5	5	7	1	0	0	3	0	2	0	1	0	0
23	3	9	9	1	0	2	13	0	2	0	0	0	0
24	7	7	8	1	0	0	4	0	6	0	0	0	0
25	4	6	10	0	0	1	14	1	13	0	0	0	0
26	5	5	8	0	0	3	14	1	4	0	0	0	0
27	7	5	7	1	2	6	13	1	11	0	0	0	0
28	8	5	9	0	1	7	13	0	8	0	1	0	0
29	7	6	7	0	1	13	9	2	6	0	0	0	0
30	5	7	11	0	1	8	9	4	3	0	1	0	0
31	4	9	8	0	1	4	10	3	10	0	0	0	0
32	9	5	5	0	1	4	11	1	6	0	0	0	0
33	5	7	6	0	0	3	8	9	11	0	2	0	0
34	7	5	8	1	1	3	18	8	4	0	1	0	0
35	9	12	5	1	0	0	19	16	5	0	1	0	0
36	4	10	7	0	0	3	14	12	2	0	1	0	0
37	9	9	10	0	0	6	9	10	3	0	0	0	0
38	14	7	7	0	1	3	12	9	3	0	1	0	0
39	13	5	5	0	0	2	4	10	3	0	1	0	0
40	9	5	4	0	1	2	5	6	3	0	2	0	0
41	7	2	3	0	1	4	4	13	2	0	0	0	0
42	6	6	0	0	0	2	2	8	0	0	0	0	0
43	2	3	3	1	0	3	2	6	0	0	0	0	0
44	1	3	0	0	0	2	2	4	0	0	0	0	0
45	0	2	0	0	0	1	3	2	1	0	0	0	0
46	2	2	1	0	0	0	2	6	0	0	0	0	0
47	2	3	1	0	1	1	3	4	1	0	0	0	0
48	1	4	2	1	1	2	1	8	1	0	0	0	0
49	1	2	1	0	0	0	3	4	0	0	1	0	0
50	1	2	1	0	0	1	4	5	1	0	0	0	0
51	0	1	3	0	0	0	3	3	0	0	0	0	0

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Appendix B.3. (page 2 of 2)

length (cm)	Marmot Bay	Marmot Island	Chiniak Bay	Ugak Bay	Kiliuda Bay	Alitak Bay	Uyak Bay	Uganik Bay	Kukak Bay	Wide Bay	Puale Bay	Shelikof Strait	Alitak Flats
52	5	1	0	0	0	1	3	1	0	0	0	0	0
53	1	2	2	0	0	0	1	3	0	0	0	0	0
54	0	0	2	0	1	0	3	1	0	0	0	0	0
55	0	5	3	0	1	0	1	3	1	0	0	0	0
56	2	3	6	0	1	0	0	1	0	0	0	0	0
57	0	4	3	0	2	0	0	2	0	0	0	0	0
58	1	2	5	0	0	0	1	3	0	0	0	0	0
59	2	2	3	0	1	0	1	1	1	0	0	0	0
60	0	7	1	0	2	0	2	1	0	0	0	0	0
61	2	4	2	0	0	0	0	1	1	0	0	0	0
62	1	3	6	0	0	0	1	1	0	0	1	0	0
63	0	0	6	0	1	0	0	0	0	0	0	0	0
64	0	2	4	0	0	0	1	2	0	0	0	0	0
65	0	0	3	0	1	0	1	1	1	0	0	0	0
66	0	0	1	0	2	0	0	4	0	0	0	0	0
67	1	0	1	0	0	0	1	1	0	0	0	0	0
68	0	1	0	0	1	0	0	0	1	0	0	0	0
70	0	0	1	0	1	0	2	0	1	0	0	0	0
71	0	1	1	0	0	0	1	1	1	0	0	0	0
72	0	0	0	0	1	0	0	2	0	0	0	0	0
73	0	0	0	0	0	0	1	1	0	0	0	0	0
74	0	0	1	0	0	0	0	0	0	0	0	0	0
75	0	0	0	0	1	0	0	0	0	0	0	0	0
78	0	0	0	0	0	0	1	0	0	0	0	0	0
79	0	0	1	0	0	0	1	0	1	0	0	0	0

Appendix B.4. Pacific cod lengths from the 2003 Westward Region small-mesh trawl survey.

length (cm)	Marmot Bay	Marmot Island	Chiniak Bay	Ugak Bay	Kiliuda Bay	Alitak Bay	Uyak Bay	Uganik Bay	Kukak Bay	Wide Bay	Puale Bay	Shelikof Strait	Alitak Flats
8	0	0	0	0	0	0	1	0	0	1	0	0	0
9	0	0	0	0	0	0	0	0	0	0	1	0	0
10	0	0	0	0	0	0	1	2	0	2	0	0	0
11	0	0	0	0	0	3	0	6	0	0	0	0	0
12	0	0	0	0	0	0	0	1	0	2	1	0	0
13	0	0	0	0	0	1	0	0	0	1	0	0	1
14	2	0	0	0	1	0	0	0	0	1	0	0	0
15	1	1	0	0	0	0	0	0	0	1	0	0	0
16	1	0	0	0	3	0	0	0	0	2	0	0	0
17	0	0	0	0	1	0	0	0	0	0	0	0	0
28	0	0	0	0	0	0	1	0	0	1	0	0	0
29	0	1	0	0	0	0	0	0	0	0	0	0	0
30	0	0	0	0	0	0	0	0	0	0	0	0	1
32	0	0	0	0	0	0	0	0	1	0	0	0	0
34	0	0	0	0	0	0	0	0	0	1	0	0	0
36	0	0	0	0	0	0	0	0	1	0	0	0	0
39	0	0	0	0	0	0	0	0	0	0	0	0	1
42	0	0	0	0	0	0	0	0	0	0	0	0	1
43	0	0	0	0	0	0	0	0	2	0	0	0	0
44	0	0	0	0	0	0	0	0	1	0	0	0	0
45	0	0	0	0	0	0	0	0	2	0	0	0	0
46	0	1	0	0	0	0	0	0	1	0	0	0	0
47	2	0	0	0	0	0	0	1	0	0	0	0	0
48	1	0	1	0	0	0	0	0	0	1	0	0	0
49	0	1	0	1	0	0	0	0	2	0	1	0	0
50	0	2	1	1	0	0	0	0	1	0	0	0	1
51	0	0	0	3	0	0	0	1	0	0	0	0	0
52	2	0	0	2	1	0	1	1	2	2	1	0	0
53	1	2	1	0	1	1	1	0	2	0	0	0	1
54	0	2	0	2	2	0	0	0	0	0	1	0	0
55	0	4	2	0	1	1	0	0	4	0	1	0	1
56	1	4	0	1	0	0	0	0	3	1	4	0	3
57	0	3	3	0	2	0	0	2	4	1	1	0	1
58	0	7	2	2	0	1	0	0	3	1	1	0	0
59	0	3	1	0	2	0	2	2	1	1	3	0	1
60	1	8	1	0	1	0	0	1	3	4	5	0	2
61	1	9	2	2	1	0	0	2	1	3	2	0	0
62	0	14	2	0	2	1	1	0	5	2	1	0	1
63	0	10	3	0	3	0	0	0	1	3	0	0	1
64	1	10	3	1	1	0	1	0	3	1	0	0	0
65	2	6	0	0	1	1	1	1	1	5	2	0	2

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Appendix B.4. (page 2 of 2)

length (cm)	Marmot Bay	Marmot Island	Chiniak Bay	Ugak Bay	Kiliuda Bay	Alitak Bay	Uyak Bay	Uganik Bay	Kukak Bay	Wide Bay	Puale Bay	Sheikof Strait	Alitak Flats
66	0	4	4	1	2	1	0	0	1	1	1	0	1
67	3	10	3	0	1	0	0	0	1	5	1	0	1
68	0	10	2	1	0	0	0	0	1	4	0	0	0
69	0	5	0	0	2	0	0	1	1	1	0	0	0
70	2	7	1	0	3	0	0	0	4	4	0	0	0
71	2	8	2	0	2	0	0	2	0	3	0	0	0
72	0	5	1	1	2	0	1	0	0	1	1	0	1
73	0	1	1	0	1	0	0	0	0	2	0	0	0
74	0	4	1	0	1	0	0	0	0	1	0	0	1
75	2	1	1	0	0	0	0	0	0	2	0	0	0
76	0	6	0	1	1	0	0	1	0	0	0	0	0
77	0	1	3	1	0	0	0	0	0	1	0	0	0
78	0	3	0	0	1	0	0	0	0	0	0	0	0
79	1	1	1	1	2	0	0	1	0	0	0	0	0
80	0	0	0	0	1	0	0	0	0	0	0	0	0
81	0	1	0	0	0	0	0	0	0	0	0	0	0
82	0	1	1	1	0	0	0	0	0	0	0	0	0
83	0	0	1	0	0	0	0	0	0	0	0	0	0
85	0	0	1	0	2	0	0	0	0	0	0	0	0
86	0	0	1	1	1	0	0	0	0	0	0	0	0
87	0	0	0	0	1	0	0	0	0	0	0	0	0
89	0	0	0	1	0	0	0	0	0	0	0	0	0
91	0	0	0	1	0	0	0	0	0	0	0	0	0

Appendix B.5. Eulachon lengths from the 2003 Westward Region small-mesh trawl survey.

length (cm)	Marmot Bay	Marmot Island	Chiniak Bay	Ugak Bay	Kiliuda Bay	Alitak Bay	Uyak Bay	Uganik Bay	Kukak Bay	Wide Bay	Puale Bay	Shelikof Strait	Alitak Flats
8	0	0	0	0	0	0	0	1	0	0	0	0	0
9	0	2	0	0	0	0	69	12	1	0	0	0	4
10	1	6	0	0	0	1	106	16	9	0	0	0	10
11	5	16	0	1	0	1	95	8	22	0	4	0	11
12	14	16	0	11	10	2	40	5	40	0	1	0	12
13	15	7	0	17	13	0	16	12	17	0	1	0	9
14	2	8	0	15	6	1	5	0	12	0	2	0	10
15	9	33	0	7	2	3	6	5	2	0	4	0	1
16	20	41	1	3	7	0	6	10	2	0	0	0	0
17	51	82	0	4	6	2	13	28	4	0	0	0	0
18	81	107	0	17	10	6	17	16	4	0	0	0	0
19	111	196	1	64	53	2	39	24	3	0	0	0	0
20	52	106	0	92	94	0	25	17	4	0	0	0	1
21	10	34	1	56	51	0	6	14	3	0	0	0	0
22	2	6	0	10	6	0	2	7	1	0	0	0	1
23	1	0	0	0	2	0	0	3	0	0	0	0	0
24	0	0	0	0	0	0	0	1	0	0	0	0	0

Appendix B.6. Spiny dogfish lengths from the 2003 Westward Region small-mesh trawl survey.

length (cm)	Marmot Bay	Marmot Island	Chiniak Bay	Ugak Bay	Kiliuda Bay	Alitak Bay	Uyak Bay	Uganik Bay	Kukak Bay	Wide Bay	Puale Bay	Shelikof Strait	Alitak Flats
64	0	0	0	0	0	0	1	0	0	0	0	0	0
67	0	0	1	0	0	0	0	0	0	0	0	0	0
72	0	3	0	0	0	0	0	0	0	0	0	0	0
73	0	0	0	1	0	0	0	0	0	0	0	0	0
74	1	0	0	2	0	0	1	0	0	0	0	0	0
75	0	0	1	0	0	0	0	0	0	0	1	0	1
76	0	1	0	1	0	0	2	0	0	0	0	0	0
77	0	1	2	1	0	0	0	0	1	0	0	0	0
78	0	2	0	0	1	0	0	1	0	0	0	0	0
79	1	1	0	0	0	0	1	0	0	0	0	0	0
80	2	3	0	1	0	0	1	0	1	0	1	0	2
81	1	2	1	1	2	0	1	2	1	0	0	0	0
82	2	4	0	0	0	0	1	0	1	0	0	0	2
83	1	1	1	0	0	1	1	1	2	0	2	0	0
84	1	2	1	0	1	0	1	0	1	0	2	0	2
85	1	2	0	0	0	0	2	0	1	0	0	0	2
86	0	0	0	0	0	0	4	0	0	0	0	0	0
87	0	0	0	2	0	2	2	1	3	0	0	0	1
88	1	0	0	0	0	0	3	0	1	0	1	0	0
89	1	1	1	0	0	0	1	0	2	0	0	0	0
90	0	3	1	0	0	0	1	0	4	0	0	0	0
91	0	1	0	0	0	0	1	0	1	0	0	0	1
92	0	3	0	1	0	0	1	0	3	0	0	0	2
93	0	0	1	0	0	0	1	0	3	0	1	0	0
94	0	3	0	0	0	0	2	0	0	0	1	0	0
95	0	3	1	0	0	0	0	2	1	0	1	0	0
96	1	1	0	0	0	0	1	0	3	0	0	0	0
97	1	3	0	0	0	0	1	0	2	0	0	0	0
98	0	2	0	0	0	0	3	3	2	0	1	0	1
99	0	3	0	0	0	0	2	2	1	0	0	0	0
100	0	0	0	0	0	0	1	0	1	0	0	0	0
101	0	2	0	0	0	0	0	1	0	0	0	0	0
102	0	1	0	0	0	0	1	0	0	0	0	0	0
103	0	2	0	0	0	0	0	0	0	0	0	0	0
104	0	1	0	0	0	0	0	0	0	0	0	0	0
105	0	1	0	0	0	0	0	0	1	0	0	0	0
109	0	0	0	0	1	0	0	1	0	0	0	0	0
110	0	0	0	0	0	0	1	1	1	0	0	0	0

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